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Changing Concepts In the Use of Antibiotics In the Treatment of Surgical Infections

FRANK LAMONT MELENEY, M.D., D.Sc., MIAMI, FLORIDA

I have elected to review for you the changing aspects of the treatment of surgical infections that have occurred over the last 15 or 20 years. I mention these years advisedly, because 15 represents the period of our experience with the antibiotics and 20, our experience with the sulfonamides. It is well from time to time to look back over a period of years to measure progress and to see things in their proper perspective. If we are wise, we may be able to look into the future and see the goals toward which we are striving, what obstacles lie in the way, and to determine what effort is needed on our part to overcome the obstacles and reach the goals.

My experience goes back over the 20 years I have mentioned and 20 years before that, into the period when we were trying to perfect the minutiae of sterile technique,— the first principles of which were laid down by Pasteur and Lister when practically every operative wound became infected and many patients died with overwhelming sepsis. Before their time the few patients who recovered, had a high enough resistance to outweigh the virulence of the contaminating organisms by the production of laudable pus.

By perfecting the minutiae of sterile technique during the early decades of this century, we gradually had brought down the incidence of postoperative infection in clean cases to what seemed to be an irreducible minimum of 2 per cent. Even so, the incidence of infection from operations in contaminated areas ranged from 20 to 30 per cent. Many patients with fulminating infections came to us for treatment and promptly died in spite of everything we could do for them. The arch enemies of the surgeon in those days were the hemolytic Streptococcus, the hemolytic Staphylococcus aureus, the gas gangrene group of organisms, and tetanus—to mention the causes of acute fulminating infections. Then there were the slowly wasting infections caused by the tubercle bacillus, the mycotic organisms, and the bacteria that frequently work in consort following perforation of the alimentary tract. It is true that if the patient did not die promptly, we were often able to save his life by a surgical procedure, but there still was a

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Professor Emeritus of Clinical Surgery, Columbia University; Lecturer in Surgery, University of Miami School of Medicine.

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mortality of 70 to 80 per cent in staphylococcal and streptococcal septicemia and of 50 to 60 per cent in general peritonitis.

Ehrlich had had some measure of success with chemicals in the treatment of infectious diseases, specifically lues and trypanosomiasis. In 1915, he predicted a wide expansion of the field of chemotherapy. However, in that year he died and his followers, Hata, Kitasato, Neufeld, Browning, Colebrook, and Fleming, became discouraged with chemotherapy and predicted that no chemical would have any effect unless one could be found that would have more harmful effects on bacteria than on body cells and one that would act in the presence of body tissues and fluids. Mercurochrome®, gentian violet, and acriflavin each had its enthusiastic advocates, but these products failed to fulfill the first criterion; and Fleming showed that these and most other dyes inhibited the protective action of the polymorphonuclear leucocytes.

Every bacteriologist of note spent some years of study on the hemolytic Streptococcus and numerous attempts were made to obtain protective sera in animals. Although certain antitoxins could be produced for the hemolytic exotoxin, the sera failed to protect against the invasion of the organism. The same was true for the staphylococcus. Attempts were made to distinguish the many different antigenic types of both streptococci and staphylococci, with the hope of obtaining more potent protective sera. It was true that at least three distinct antigenic types of penumococcus had been discovered and specific sera had been prepared which, when administered to the proper type of case, brought about a crisis similar to that which developed spontaneously when the antibodies reached a critical level and could be demonstrated in the patient's serum. One pharmaceutical house had prepared a large colony of rabbits specifically immunized to the three main types of pneumococcus. But it was found that neither animals nor man could produce any significant antibodies to either the hemolytic Streptococcus or the Staphylococcus aureus, and septic infections with these organisms followed a distinctive course, seldom yielding and then only after prolonged treatment with multiple surgical procedures.

The Sulfonamides

I have said that many of Ehrlich's pupils and followers became discouraged with the potentialities of chemotherapy, particularly with the dyes, but one persisted in his search. Finally he, Domagk, in 1935 found what everyone had been looking for—an agent that would kill the hemolytic Streptococcus, when injected into the body, without injuring body tissues. That drug was an azo dye, prontosil. The Trefouels discovered that the active principle was not the dye itself but a colorless substance called sulfanilamide. With this agent, Leonard Colebrook at Queen Charlotte's Hospital in London significantly reduced mortality and morbidity in puerperal fever. Colebrook's claims were modest, but as soon as he made his report, those who came after him accepted the benefits of his discovery. Soon sulfanilaminde was being used widely and indiscriminately. It was not uncommon to hear a physician say, "I didn't know what was the matter with the patient, so I gave him sulfanilamide." Often, the illness was not an infection at all.

The one thing sulfanilamide did was practically to wipe out mortality from hemolytic streptococcal infections. Septicemia from that organism disappeared from hospital wards and even the previously invariably fatal streptococcal meningitis yielded to sulfanilamide. Derivatives of sulfanilamide proved to be less toxic and more effective against the pneumococcus than the parent drug, and thus sulfapyridine and sulfadiazine replaced the specific pneumococcus sera and rendered the large colony of immunized rabbits useless. But the staphylococcus failed to yield. Staphylococcal septicemia developed in the face of sulfonamide therapy and killed almost as frequently as before. Then, for a brief period, bacteriophage played an important and successful role in the treatment of staphylococcal septicemia, but this in turn was displaced by penicillin as the agent of choice for staphylococcal infections.

When, in 1940, it was thought that World War II inevitably would involve our country, the Surgeons General of the Army, Navy, and Public Health Service appealed to the National Research Council for advice regarding this spreading field of chemotherapy. They wanted to know what might be expected of the sulfonamides in the service training camps and at the front for such diseases as venereal disorders, respiratory infections, tropical diseases as well as in burns and in gunshot and shrapnel wounds. The Na-

tional Research Council responded by setting up a "Committee on Chemotherapy and Other Agents." It was soon evident that to mobilize medical research for the war effort, many other phases of war medicine would have to be studied. Four subcommittees were set up to study the sulfonamides in various fields of importance and within a year from the time of initiating the plan, the limitations as well as the indications for the use of the sulfonamides had become pretty well established. If given early in the course of the disease, they were found effective against hemolytic streptococcal infections, but were less effective after tissue breakdown had occurred. They were generally of less benefit in surgical than in medical infections, because they were inactivated by the peptones and acids produced by tissue breakdown and often could not reach foci of infection. Whether given systemically or applied locally, they failed to reduce the incidence of infections in war wounds, although they minimized the spread of invasive infection through the blood stream.

Although a big step forward had been taken by the control of hemolytic streptococcal infections, further progress came to a standstill after the first five years. However, this success raised hopes that other antibacterial agents might be discovered, if the search could be intensified.

The Early Small Doses of Penicillin

The failure of the sulfonamides to measure up to expectations led Florey and his group at Oxford in 1939 to turn back to a discovery made a decade earlier by Fleming, who had found that penicillin produced by the mold, penicillium, could purify mixed cultures by eliminating the coccal elements. Fleming did not fully realize the significance of his discovery and the small quantity of penicillin produced by Florey and Chain and their associates was not enough to cure the first cases of staphylococcal sepsis treated clinically. The results indicated, however, the potentialities of penicillin if it could be produced successfully on a commercial scale. Greater production was not possible in Britain because of the strain put upon the British pharmaceutical houses during the early years of the war. So Florey came to this country and called for the help of our Office of Scientific Research and Development, which responded generously. The War Production Board, the Department of Agriculture, and 17 pharmaceutical firms gave a splendid example of co-operation in the production of this new drug and it was not long before week by week reports indicated a gradually growing stockpile of penicillin available for clinical investigation. This was carried on in well controlled study groups at home and some was made available for a trial in the field among the Allied forces when the Normandy invasion began in 1944.

With limited quantities available, its clinical application by the study groups had to be controlled strictly. It could be used only against infections caused by susceptible organisms and the doses were limited to 5,000 units every three hours for a total of 40,000 units a day. I remember very well one of the early cases of Staphylococcus aureus septicemia with osteomyelitis of the ilium, a desperately sick boy, whose septicemia responded promptly to that small dose. However, the antibiotic was stopped too soon because of the limited supply. The infection recurred in the lungs, but quieted down with renewal of the therapy. When it again was stopped too soon, a second flare-up occurred with the appearance of an internal abscess on the inner surface of the ilium. This also subsided with a second renewal of treatment at 40,000 units a day. The response of those early cases of severe staphylococcal septicemia to small doses, was and always has been a marvel to me and it should not be forgotten in these days when we think nothing of giving 6 to 8 million units a day. I remember with what surprise I read in one of the early reports that Champ Lyons advocated as much as 200,000 units a day for severe staphylococcal infection.

Let us not forget that the first phase of the antibiotic era was solely with the use of penicillin and that in most cases, it accomplished the desired results in both staphylococcus and hemolytic streptococcus infections with amazingly small doses. But even small doses were expensive in those days—$27 for 100,000 units, and it could not be wasted. So some cases did not get enough and some that needed it, did not get any. I remember visiting Dr. Alton Ochsner's Clinic in New Orleans during that period. A case was presented which should have been treated with penicillin, but the quota of penicillin for that month had been used up and none was available for that particular patient.

In those days, 97 or 98 per cent of all staphyl-

ococcal strains were susceptible to penicillin, but if the doses were small or treatment had to be stopped or curtailed before infection was controlled and all of the organisms killed, the more resistant individual cocci would survive and their progeny would pass on their resistance to their offspring. Thus resistant strains of the staphylococcus began to appear.

The Indiscriminate Use of Penicillin

With the rapidly increasing production of penicillin, the price decreased and it became available to everybody. Soon penicillin was being used for everything. No one bothered to determine the cause of any infection. Patients often came to physicians demanding penicillin shots which they got. The physician figured that if he didn't give it the patient would go to some one else who would. Thus a great many patients received penicillin who never should have had it and many of them became allergic to it. This was the second stage of the antibiotic era—the indiscriminate use of penicillin without laboratory check on the sensitivity of the organisms.

Meanwhile, the several units that had been set up to appraise the effect of penicillin in treating surgical infections combined their results, examined them critically, and correlated them with the bacteriological findings and the method of application. They found that penicillin was not a panacea but was successful in controlling surgical infections in about two-thirds of the cases treated.

The criteria for determining whether or not the antibiotic was of some use in controlling the infection rested upon affirmative answers to the following questions: (1) Did it obviate the necessity for a surgical operation? (2) Did it permit a limited or abbreviated surgical procedure? (3) Did it shorten healing time? (4) Did it permit primary closure of the wound after removal of or drainage of the infected focus? (5) Did it permit an earlier secondary closure than would have been expected without the use of the antibiotic? The results were considered excellent, if there was an immediate or prompt response with obvious control of the infection within 72 hours; good, if there was a definite but slower response; and questionable, if it was not certain whether the antibiotic had any effect. In the last category were cases in which the infection obviously failed to come under control.

When the 33 per cent of failures of penicillin treatment was analyzed, it was found that the majority were due to the fact that the causative organisms were not susceptible to penicillin. In other cases, secondary contaminants, particularly gram-negative rods, had the power of producing penicillinase, capable of inactivating penicillin and rendering it powerless against the causative organism. In some instances it was a matter of too little and too late. In some cases, necrotic tissue was left in situ, protecting the invading organism. No, penicillin was not a panacea, but great satisfaction was derived from the belief that the second arch enemy of the surgeon, the Staphylococcus aureus, had been conquered and the gas gangrene group of organisms had been brought under some measure of control. This success stimulated the search for other antibiotics that would make up for the limitations of penicillin. Particularly needed was an antibiotic effective against gram-negative rods and the tubercle bacillus.

Bacitracin

Bacitracin, discovered in 1943, was found to have a somewhat wider antibacterial spectrum than penicillin. It was not effective against the tubercle bacillus or the gram-negative rods, but it had some advantages over penicillin. It was not inactivated by penicillinase producers, making it more effective in mixed infections. Furthermore, it was not allergenic as was penicillin. This drawback to the use of penicillin was becoming increasingly important as cases of serious sensitivity reactions and even anaphylactic shock and death, began to mount.

Streptomycin

The soil bacteriologists, as exemplified by Waksman, now came to the fore. Antibiotics began to be discovered by the score in specimens of soil collected from all corners of the earth. Most of them were toxic and not suitable for clinical use, but the great abundance of soil organisms provided a field for research that proved to be both promising and productive. Out of this study came streptomycin, Aureomycin®, Terramycin®, Chloromycetin®, and erythromycin.

Streptomycin proved to be the one that had been sought for to attack the tubercle bacillus. To be sure, it had its limitations as to dosage

and duration of treatment because of its unique toxic action on the 8th cranial nerve. Furthermore, it had the peculiar property of permitting organisms to develop resistance rapidly—not only the gram-negative rods but the tubercle bacillus as well. The latter fault was overcome somewhat by combining it with para-aminosalicylic acid and/or isoniazid. Adding streptomycin to penicillin seemed to increase its potency, particularly in the control of subacute bacterial endocarditis. Thus it was demonstrated that in some combinations at least, there was a synergistic action.

The Indiscriminate Use of the Mycins

The mycins were found to be potent against many of the gram-negative rods as well as against the cocci and they came to be known as the broad spectrum antibiotics. However, they were found to be bacteriostatic rather than bactericidal hence less effective for surgical infections than for medical infections. This distinction is important when it comes to antibiotic therapy. Surgical infections are characterized by a local breakdown of tissue and an exudation of leucocytes into an abscess or into some body cavity, such as a joint, the pleura, the pericardium, or the peritoneum. The blood vessels in the periphery of an abscess are closed by blood clot, rendering it difficult for any antibiotic circulating in the blood to reach the highly concentrated mass of bacteria within the focus of infection. Furthermore, the organisms causing surgical infections are those against which the body is incapable of building up immunity, whereas those causing medical infections are antigenic. For that reason, bactericidal antibiotics are more important than bacteriostatic antibiotics in the treatment of surgical infections and less dependence is placed upon the protective action of the body tissues.

When bacitracin, Aureomycin, and Chloromycetin first became available, I was asked to take part in a symposium on antibiotics at Yale Medical School in New Haven. That meeting was in 1949. Dr. Woodward and Dr. Schoenbach, who spoke of the virtues of Chloromycetin and Aureomycin, respectively, did not consider sensitivity tests important or necessary, because the results of treatment often did not follow the in vitro test results. They advocated the use of these broad spectrum antibiotics without sensitivity tests or even bacteriological cultures to determine the causative organisms. I strongly advocated basing treatment in surgical infections on the sensitivity tests, because many times I had found that failure to respond to treatment was due to the lack of sensitivity of the causative organism to the antibiotic chosen.

I concluded that this was a fundamental difference between medical and surgical infections. Medical infections are self-limiting and often will get well without or in spite of antibiotic treatment. They respond to many different antibiotics, so that it usually does not matter much which is used. With surgical infections, however, the causative organism often is susceptible to just one antibiotic and resistant to others. Medical infections usually are due to a single organism, while surgical infections tend to be polymicrobic. Here again, a single broad spectrum bacteriostatic antibiotic may be effective for the medical infection and be quite ineffective for the mixed surgical infection. Furthermore, medical infections frequently get well if the antibiotic reaches the area involved in dilute form through the blood stream. In surgical infections, particularly chronic ones, dead tissue often has to be removed before the antibiotic can reach the area of involvement. An abscess may be masked and overlooked and later flare up when the antibiotic has been discontinued. When incisions are made, an opportunity is given for local application of the antibiotic in high bactericidal concentration.

Many physicians went on the principle advocated by Schoenbach and Woodward, of using the broad spectrum antibiotics without bothering with cultures or sensitivity tests. If one failed, another was tried, then another and another. The expression, "I gave an adequate dose of terramycin, but the infection failed to respond, so I changed to Chloromycetin" was common. Certainly a dose is not adequate if it is not effective.

Thus we experienced the third stage of the antibiotic era— the indiscriminate use of the broad spectrum antibiotics without laboratory confirmation of the sensitivity of the causative organism. Some physicians still are working on this principle.

The Increasing Resistance of Organisms

All through the period of the widespread and indiscriminate use of penicillin followed by the

widespread and indiscriminate use of the broad spectrum antibiotics, the ubiquitous staphylococcus refused to be controlled. It had developed the unique capacity of becoming resistant to the antibiotics used against it. This phenomenon has been studied extensively but is not completely understood. It is known that in any given colony of bacteria some are more susceptible than others and that in any culture, mutant forms may develop in an effort to survive in a changing environment. The more susceptible forms are killed off, the resistant ones survive, and their progeny inherit the characteristic of resistance. This is repeated over and over as the organism goes from one patient to the next, with a gradual increase of resistance of the strain.

During the period when staphylococci were almost all susceptible to penicillin, surgeons grew careless in their sterile technique. They were less careful in scrubbing their hands and in preparing the patient's skin in the operative field. They became careless about masking the nose as well as the mouth in the operating room and at the time of dressings. Increased contamination of the operative wounds occurred. Surgeons became less careful of hemostasis and less gentle with the tissues. Consequently, the local environment became favorable for bacterial growth and the infection rate began to increase.

Now we are faced with a serious situation. The rampant staphylococcus is resistant to penicillin, streptomycin, and the tetracyclines, and the problem has reached major proportions both at home and abroad. This is not only a problem for surgeons, but for pediatricians, obstetricians, internists, hospital administrators, and public health officials.

In September of 1958 the United States Public Health Service, through its Communicable Disease Center in Atlanta, called a meeting to discuss the problem. The conference was composed of delegates representing 70 different organizations and societies and other interested individuals who attended voluntarily. Surgeon General L. E. Burney stressed the concern of the U. S. Public Health Service in the problem of hospital-acquired staphylococcal disease and the determination of this agency to study every phase of it from all possible angles by means of funds for research appropriated for that purpose by Congress. He called for the co-operation of all interested organizations and urged the conference to recommend methods of study that would lead to the solution of the problem.

Dr. Robert Anderson, Chief of the Communicable Disease Center, USPHS, in Atlanta, described "The Emergence of the Hospital-Acquired Staphylococcal Disease Problem in the U. S." He stressed the probable association of the widespread use of antibiotics with the present problem and the development of resistance by staphylococci to the commonly used antibiotics. He suggested that strains of particularly high degrees of transmissibility and virulence have emerged from the great population of staphylococci under the impact of the antibiotics. Although there is a debate going on as to the relative importance of the carrier versus the environment in the transmission and maintenance of staphylococcal disease, evidence seems to indicate that both factors are important. Many administrative problems accompany control of either the carrier or the environment. He stated that it is "now apparent that there are very real and important community aspects to this problem. Organisms responsible for hospital infections are carried home by the discharged patient, transmitted to various members of the family . . . and are responsible for repeated familial outbreaks of suppurative disease."

Dr. Chester W. Howe, Associate Professor of Surgery at Boston University, read a paper on "Staphylococcal Disease on Surgical Services." He recalled the fact that "during the pre-antibiotic era, staphylococci were the most common wound pathogens." The next most common pathogenic organism formerly was the hemolytic Streptococcus. Because of the marked susceptibility of this organism to the sulfonamides and to penicillin, it no longer is of major importance numerically. However, the staphylococcus, having developed resistance to penicillin, streptomycin, and the tetracyclines, is coming into increasing importance in traumatic wounds and in burns.

Dr. Frederick Wentworth and his co-workers in the Department of Health in Columbus, Ohio, discussed the "Community Aspects of Hospital-Acquired Staphylococcal Disease." They stated that " it is now clear that the hospital with an uncontrolled staphylococcal disease problem may act as a focus of infection for the community itself." An epidemic often starts in a nursery, but the infant develops the first signs of disease

after discharge from the hospital and then produces a breast abscess in the mother. Then follows simultaneous or subsequent transmission to other members of the family. The authors, studying families of 26 infants infected with the epidemic strain 80/81 during a nursery outbreak, found that "during five months of observation about three-fourths of the mothers and one-third of the fathers and siblings were shown to be carrying the strain in their nasal pharynx on one or more occasions. Eleven of the 26 families were still infected at the end of the study." They reported one family that had an almost continuous history of staphylococcal infections for four years following an epidemic and another family for well over a year. In the circumstances it is difficult to eradicate the organisms from a family.

The conference accepted hospital-acquired staphylococcal disease as a serious problem of global scope and advised the establishment of hospital infections committees for the prevention and control of hospital-acquired infections. "The hospital infections committee should consist of active, interested members of all major hospital departments . . . and have complete administrative backing . . . The local health officer should be invited to be a consultant to the committee . . . The committee should regularly collect complete data on all infections acquired within the hospital" and make periodic reports to the medical staff and to the administrator. "The committee should sponsor an educational program for all hospital personnel, presenting current concepts in the proper prevention and control of hospital-acquired infections . . . Frequent and regular meetings of the committee are essential to maintain a high level of interest."

It is of great interest to me that the hemolytic Staphylococcus aureus, formerly the arch enemy of the surgeon, now has become a problem for all departments in the hospital. Does that mean that in becoming resistant to penicillin, streptomycin, and the tetracyclines, the organism has become more virulent? It may be so, but we have no concrete evidence to prove it. Infection depends on (1) the lowered resistance of the host, (2) the virulence of the invading organism, and (3) the dose of organisms involved. It may be that after a period of time in which staphylococcal infections were rare (because of the effectiveness of penicillin), people lost some of their natural resistance to this organism. It also may be that with the general letdown of cleanliness precautions on the part of hospital personnel, including physicians, nurses, and ward attendants, the number of organisms falling into a wound has increased to the point where the natural defenses cannot cope with the invasion.

What must we do, as surgeons, to meet the situation? First, we must admit that it is a complicated problem with many ramifications and we must follow along every pathway that is connected with the main highway. We must get back to better operative technique particularly, gentleness with tissues, certainty of hemostasis, and avoidance of tissue tension. We must get back to better sterile technique, with a sterile sense to know when we have broken sterility and a sterile conscience to correct the break at once. We must give up the indiscriminate use of antibiotics, both prophylactically and actively, and apply them specifically when they are indicated. We must determine the sensitivity not only of the causative but the associated organisms and meet every one with the appropriate antibiotic.

The antibiotics used should be bactericidal and reach the organisms in high enough concentration to kill them outright. Organisms drop into a wound during an operation and are all on the surface for several hours. Locally applied bactericidal antibiotics will render them incapable of survival, if they are susceptible to the agents employed. A combination of bacitracin 1,000 units per cc. (2%) and neomycin (1%) will cover the floral spectrum of most wounds better than any other antibiotic combination, bacitracin for the gram-positives, neomycin for the gram-negatives, and both for resistant staphylococci. These antibiotics may be employed during and at the end of all clean operations on the heart and blood vessels, lungs, bones, joints, and the brain. If infection develops in such cases, it may nullify the whole purpose of the operation. Antibiotics should not be used prophylactically on other clean cases. In properly conducted operating rooms, the rate of wound infection in clean cases should not be over 2 per cent. For operations in contaminated areas, cultures should be taken of the field area—for example, the eye, ear, nose, mouth, the external genitalia—and the appropriate bactericidal antibiotic should be applied locally during and at the end

of operation before wound closure. In established infections the causative organism and all associated with it, must be cultured, purified, and tested for sensitivity and the most potent bactericidal antibiotic given, both locally and systemically.

Penicillin, streptomycin, and the tetracyclines are no longer the antibiotics of choice in staphlococcal infections. A choice is given among bacitracin, vancomycin, kanamycin, or ristocetin. Erythromycin is a borderline choice. It is bacteriostatic rather than bactericidal and many staphylococci are now resistant to it. Staphylococci rarely become resistant to bacitracin and the antibiotic is not allergenic. There need be no fear of nephrotoxicity from systemic bacitracin, if the precautions of administration and dosage are followed. The chief precaution is to see that the patient has an intake of 2,500 cc. of fluid daily, to dilute the bacitracin as it passes through the tubular epithelium of the kidneys. Vancomycin, kanamycin, and ristocetin have demonstrated their ability to control invasive staphylococcal infection, each one having its special limitations. More experience is needed with these three agents to determine their indications and limitations and the development of bacterial resistance to them.

The indiscriminate use of penicillin, streptomycin, and the tetracyclines also has brought some of the gram-negative rods from obscurity to relative importance. Of these organisms the most important are the proteus, pseudomonas, and aerobacter groups. It is true that they are for the most part surface infectors and not invaders, so that usually they can be met and controlled by the local application of the most potent bactericidal antibiotic. Neomycin (1%) is the most potent against proteus and polymyxin B (0.1%) against the pseudomonas group. Neomycin is not only nephrotoxic but neurotoxic and should be used systemically only when the proteus has become invasive and if it is the only potent antibiotic. Systemic polymyxin B is more nephrotoxic than bacitracin, but it may be used with caution as to dosage and duration of treatment. The author is at present helping to evaluate Colimycin®, which has shown potency against the pseudomonas group with very low toxicity.

Surgeons, surgical nurses, and ward attendants should know whether or not they are carriers of staphylococci in their nose and throat. If so, they should attempt to limit and control the spread of these organisms by frequent washing of the hands and the avoidance of contact with other patients without the protection of masks, gloves, and in some cases, gowns. An attempt should be made to eliminate the organisms from the nose and throat or to reduce their number. This can be done by the frequent application of a spray containing bacitracin (1%) and neomycin (0.5%), attempting to reach all of the facial sinuses with the antibiotics. Carriers should always use disposable paper handkerchiefs instead of washable ones and should be ever conscious of the likelihood of spreading contamination around their environment.

How responsible is the hospital management and its board of directors for an infection that develops in a hospital? If a patient comes into the hospital expecting to spend four or five days for a goiter operation or eight or ten days for a hernia operation, and infection occurs and he is in the hospital two or three times as long because of the infection, should the hospital remit his bill for those extra days? Has the patient any ground for suit against the hospital or any of the individuals who took care of him during his hospital stay? These are questions I cannot answer, but they will have to be faced unless this problem of hospital infections is solved.

We are now in the fourth phase of the antibiotic era, when the intelligent and successful use of the antibiotics requires a knowledge of the sensitivity of the causative and associated organisms to the available bactericidal antibiotics and the careful application of those agents, both systemically and locally, in concentrations lethal to the bacteria and safe for the patient. We must be aware of all of the ramifications of the important problems of hospital infections.

SUMMARY

I have tried to discuss the changing concepts of the treatment of surgical infections from the time when we were faced with serious invasive infections due to the hemolytic Streptococcus, the hemolytic Staphylococcus aureus, the gas gangrene group of organisms, and the tubercle

bacillus; when we had only the natural defenses of the body and the scalpel to limit and control their activity. Then we went through the five year period when we had the assistance of the sulfonamides, and into and through the last 15 years, when we have had the more potent aid of the antibiotics. I have shown how these so-called adjuncts to surgery have modified some of the former principles of surgery and have stated the criteria by which we can evaluate the role played by the antibiotics. I have shown how treatment with the aid of the antibiotics has evolved through the phase of the small doses of penicillin, then the excessive doses of penicillin, and its indiscriminate use with the development of minor and major allergic reactions.

Next came the phase of the indiscriminate use of the broad spectrum antibiotics without the aid of laboratory sensitivity testing. I have stressed the difference between medical and surgical infections and the reasons for employing bactericidal rather than bacteriostatic antibiotics in the treatment of surgical infections. I have pointed out the value of the local application of potent bactericidal antibiotics in surgical infections, to bring the antibacterial agent into close contact with the organisms in lethal concentration. I have described the resurgence of the staphylococcus as a major agent of infection and the growing menace of some of the gram-negative aerobic rods formerly of secondary importance. I have discussed briefly the responsibility of the hospital management in the control of hospital-acquired infection and the advisability of identifying carriers and limiting the spread of organisms by these carriers.

I have stressed the vital role of the laboratory and the tests for sensitivity of the organisms and the close co-operation required between the clinicians and the laboratory, so that the most potent antibiotics may be employed at the earliest possible time in the course of the infection, thus giving the patient the full benefit of our knowledge and reducing the time and expense of his hospital stay. Such effective treatment of individual cases will aid greatly in minimizing the spread of these organisms by carriers among hospital personnel throughout the hospital environment.

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Incidence of thrombosis

One discouraging feature of many reports on the surgery of peripheral arteriosclerosis has been the relatively high incidence of the late thrombosis. At present, in a group of about 75 patients with peripheral arteriosclerosis bypassed by grafts, there have been about 25 per cent of late occlusions from four to 18 months after operation. Arteriography carried out on patients postoperatively, at regular intervals, demonstrates no evidence of plaque formation within the grafts. We have been able, however, to see the development of plaques in the arteries or proximal to the graft, especially in the areas where arterial clamps were placed across the artery. It is felt that trauma to these sclerotic vessels has produced a more rapid progression of atheromatous formation in these areas than would otherwise have occurred. Therefore, technically it is vitally important to produce minimal trauma to sclerotic vessels if the grafts are to function for long periods of time. What is needed is a medical method of preventing further progression of arteriosclerosis after the placement of such grafts. Until such time as this is developed, occasional cases of late graft occlusion will continue to occur regardless of the type of graft used. *W. Sterling Edwards, M.D. Recent Advances in Arterial Surgery. Rhode Island M. J. May 1959.*

Acute Pancreatitis

E. Clinton Texter, Jr., M.D., Martin D. Liemer, M.D., Gaston Vantrappen, M.D., and Clifford J. Barborka, M.D., Chicago

Although acute pancreatitis is a common entity, progress in diagnosis and treatment has not been as spectacular as in some other diseases.[1] Recently new diagnostic methods and approaches to treatment have been proposed.

Many of the problems related to pancreatic disease concern the relatively inaccessible location of the organ. Symptomatology of patients with pancreatitis may be so bizarre the disease is not recognized. Repeated attacks of pancreatitis in the same patient are not uncommon.[1,2,3] Diagnosis of acute pancreatitis frequently is difficult; neither the physical examination nor radiologic study contribute greatly to its establishment.[4] Although determination of the serum amylase level early in the course of the disease has been stressed in diagnosis,[5] recent reports have pointed out the limitations of this test. The present report reviews the problem of acute pancreatitis and incorporates our experience with 22 patients seen at the VA Research Hospital during the period, 1953-1958.

Pathologic Aspects

There is interstitial edema in the early stage of acute pancreatitis. Frequently, this stage is so transient it may not be recognized. The characteristic findings in acute hemorrhagic pancreatitis include proteolytic destruction of the pancreatic parenchyma, necrosis of blood vessels with subsequent hemorrhage, necrosis of fat by lypolytic enzymes, and the accompanying inflammatory reaction. If the patient survives the initial attack, the necrotic areas may be replaced by diffuse or focal fibrosis, calcification, and ductal dilatation. The gross alterations depend upon the stage of the disease. Subsequent to the initial changes due to edema, hemorrhagic areas may be noted. The most striking change, however, is subcutaneous fat necrosis involving not only the pancreas but adjacent tissues.

Etiological Factors and Pathogenesis

The etiological factors in pancreatic disease may be classified into the following categories: infectious, mechanical, vascular, metabolic, toxic, and traumatic.[6] Infection is not an important factor in the majority of cases. The mechanical theory offers the best explanation for the pathogenesis of acute pancreatitis. Some patients have a common channel between the pancreatic duct and the common bile duct, and obstruction occurs secondarily to sphincter spasm, edema, fibrosis, tumor, or stone. In any event, the sequence of events and the pathogenesis of pancreatitis would appear to be the same—namely, pancreatic secretion, ductile obstruction, ductile hypertension, and ductile rupture with extravasation of pancreatic juice into the interstitial tissues, and autodigestion of the pancreas. Hypersecretion of pancreatic juice as a result of overeating or of alcholism appears to be an important contributing factor.[7]

Although vascular factors may be important in the production of pancreatitis, their role in its initiation has not been established clearly. Trauma, although a relatively infrequent etiologic factor, is of great importance because of the seriousness of pancreatitis associated with abdominal trauma or following surgical exploration.

The pathogenesis of pancreatitis has been studied utilizing two approaches: 1) the study of factors operating in patients with acute pan-

From the Gastroenterology Unit, Department of Medicine, VA Research Hospital, Passavant Memorial Hospital, and Northwestern University Medical Center.

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creatitis, and 2) the use of experimental animals for the study of the sequence of events in experimental pancreatitis.

Clinical Observations

Neither the age nor sex incidence has shed important light upon the pathogenesis of pancreatitis. Pancreatitis occurs in patients of all ages although it tends to be less common in children.[8] The mean age of the patients at the VA Research Hospital was 39 years, with a range of 24 to 63 years. Other reports indicate a preponderance of the disease below the age of 50.[1,9,10] When pancreatitis is associated with biliary tract disease, all age decades are affected more evenly.[10,11] Acute pancreatitis appears with equal frequency in both sexes on the basis of clinical reports although autopsy statistics indicate it is 50 per cent more common in women than in men.[1]

Excessive indulgence in alcohol appears to be the commonest predisposing factor. A history of significant alcoholism was obtained in 64 per cent of patients at the VA Research Hospital. The incidence of alcoholism in other reports ranges between 8.1 per cent[9] to as high as 69 per cent.[12,13]

The second important predisposing factor appears to be the presence of gall bladder disease. Gallstones or nonvisualization of the gall bladder was observed in 27 per cent of the patients at the VA Research Hospital. Other reports indicate that the incidence of gall bladder disease varies between 33 and 80 per cent.[1,9,12,14,16] In the collected series of Fallis and Plain, gallstones were found in 367 of 667 patients.[17]

The relationship between lipid metabolism and acute pancreatitis is of interest. Lactescence of the serum, which is the result of hyperlipemia,[18] in association with pancreatitis was observed in two of our patients. The hyperlipemia that accompanies the acute attack usually reverts to normal upon recovery.[19] Pancreatitis also is more frequent in patients with essential hyperlipemia.[20] It has been suggested that the pancreatitis associated with pregnancy may be the result of hyperlipemia.[21,22] Pancreatitis also is frequent in association with states of malnutrition such as kwashiorkor. Pancreatitis may follow vigorous re-feeding after a period of starvation.[23] The pancreas is particularly vulnerable to protein deficiency due to the large amount of protein required for pancreatic enzyme formation.[24,25]

Experimental Observations: Pancreatitis may be produced experimentally by one of the following methods: (1) obstruction of the ducts, (2) impairment of blood supply, (3) as a result of mechanical or chemical trauma, (4) as a result of metabolic derangement, or (5) local anaphylaxis.[6] None of the methods used for the production of experimental pancreatitis is entirely satisfactory and the etiologic agent or agents do not have the same weight as the corresponding factors in spontaneous acute pancreatitis.

Clinical Features

The major manifestations of acute pancreatitis are abdominal pain, nausea, vomiting, fever, and shock.

Abdominal Pain: The most frequent symptom of acute pancreatitis is abdominal pain. It was observed in all of our patients. The mean duration was four days. Its site frequently is epigastric and not infrequently pain radiates to the back. But the location varies, depending upon the area of the pancreas involved. Pain originating in the head of the pancreas is referred to the left upper quadrant of the abdomen.[26] Pancreatic pain tends to be severe and constant and frequently is not relieved by narcotics. Bending forward may relieve it somewhat and many patients will assume a characteristic position by drawing up their knees toward the chest.

Nausea and Vomiting: Nausea and vomiting are frequent manifestations of pancreatitis as a result of the disease or secondary to the associated gastritis, or because of the ileus accompanying pancreatitis.

Fever and Shock: Elevation of temperature occurred in half of the patients. Although the maximum was 106° F., the usual temperature elevation was in the neighborhood of 101°. Shock may be present to a variable degree, depending upon the severity of the illness. Shock is common in hemorrhagic pancreatitis and is a poor prognostic sign.[11,13]

Physical Findings: Early in the course of the disease, only deep tenderness may be noted in the epigastrium. Abdominal distention is common, but there is little rigidity of the abdominal wall or rebound tenderness. The bowel sounds may be unchanged or reduced, depending upon whether adynamic ileus is present. Examination of the chest may reveal evidence of atelectasis or pleural

effusion; these findings were observed in nine per cent of our group of patients. A number of skin signs have been described in association with pancreatitis which are of historic significance only as they are late manifestations of the disease.[27] They were not observed in any of our patients.

Laboratory Findings

Serum Amylase: Serum amylase is reported to be elevated early in the course of acute pancreatitis although normal values usually are obtained after two to three days. The real value of the serum amylase diagnosis is difficult to ascertain for, in many of the reported series, elevation was used as a criterion for diagnosis of acute pancreatitis. Siler and Wulson reported that the serum amylase was elevated in 82 per cent of their series.[9] In contrast, patients with fatal pancreatitis may have no significant elevation.[11,13]

The serum amylase was determined in all 22 of our patients within 24 hours of admission. Only five of 18 patients had elevations of over 128 units by the Wohlgemuth method and in the four, studied by the Somogy technique, values ranged between 243 and 380. Similar findings were reported from the VA Hospital at Fort Howard, Maryland. None of the patients with pancreatitis had serum amylase values greater than 500 Somogy units and only 50 per cent of the cases of acute pancreatitis had values in excess of 180 Somogy units.[28] Cope and Morrison pointed out that an amylase value of 500 or more Somogy units, which is emphasized in the literature as being necessary for the diagnosis of pancreatitis, would have eliminated all the cases in their series. Heffernon and Cassiet also reported elevations of serum amylase in only 28 of 48 patients with established acute hemorrhagic pancreatitis.[29]

McCorkle and Goldman noted that the serum amylase levels in patients with pancreatitis fall into six patterns: (1) a sharp rise and fall to normal; (2) a sharp rise and fall to subnormal levels; (3) fluctuation within the normal zone; (4) sustained high values that may occur with extension or continuation of the disease; (5) secondary elevations several days after a fall to normal, indicating either exacerbation or the development of complicating parotitis; and (6) slight elevation late in the disease in patients seen several days after the onset of the illness.[30]

Attempts to establish arbitrary levels of serum amylase for the diagnosis of pancreatitis do not appear justified. Many cases having the clinical and operative findings of pancreatitis will not be so diagnosed if arbitrary values of three to five times the normal value are depended upon for diagnosis.[31,32] Further, elevation of the serum amylase is not necessarily diagnostic of pancreatitis as this may occur in patients with perforated peptic ulcer,[33] intestinal obstruction, mesenteric venous thrombosis,[34] peritonitis, or pancreatic cancer. Administration of opiates or meperidine may elevate the level.[28,35] Serum amylase also is affected by factors altering carbohydrate metabolism in the absence of pancreatic disease.[36]

Peritoneal Fluid Amylase: The concentrations of amylase in the peritoneal fluid may not only be higher than in the blood but may persist above normal for two to four days.[37,38] High values of amylase in the peritoneal fluid also have been reported in association with mesenteric venous thrombosis.[34]

Urinary Amylase: Normally, the kidneys concentrate the amylase present in the serum. This relationship usually persists in acute pancreatitis, and the urinary amylase may remain high for a longer period of time than the serum amylase. Further, the urinary amylase levels better reflect the clinical course of the patient than do the serum levels.[39] However, in the presence of impaired renal function, the rise in urinary amylase may be delayed whereas the serum amylase will remain elevated.[40]

Serum Lipase: Normally, little lipase of pancreatic origin is present in the blood stream but in pancreatic disease, serum lipase may enter the blood stream in significant amounts. The amount tends to vary directly with the serum amylase, although lipase is elevated in a higher proportion of cases and the elevation may persist longer. The test is less frequently performed because when using the serum and olive oil method, the serum must be incubated for 24 hours. Results may be obtained in one hour if tributyrin substrate is employed,[41] but the value of measuring the serum tributyrinase has been questioned.[42]

Serum Trypsin: Until recently, serum trypsin levels could not be measured satisfactorily because of the presence of powerful inhibitors of trypsin that are present in the serum. Recently, Nardi proposed a new technique for measuring serum trypsin, using alpha benzoyl-l-arginine

amino hydrochloride which is hydrolized in the presence of trypsin to form benzoyl-l-arginine and ammonia. The ammonia is then measured by the Conway micro-diffusion technique.[43,44] In studies on 58 subjects, Nardi found the serum trypsin to be a more sensitive and reliable index than either serum amylase or lipase. The mean value for 35 normal subjects was 31 tryptic units, whereas the mean value for 16 patients with pancreatitis was 443 tryptic units. Further studies will be necessary to establish the values of the serum trypsin as a diagnostic test.

Antithrombin Titer: Although the antithrombin titer has been reported to be elevated in acute pancreatitis,[45] other investigators[46] have not been able to confirm this observation and the test appears to be of little value in diagnosis.

Direct Estimation of Pancreatic Secretory Capacity

The estimation of pancreatic secretion by intraduodenal intubation in the control state gives relatively little information about the function of the pancreas. However, following intravenous administration of secretin, Lagerloff reported two main types of abnormal response.[47,48] During the first two weeks of the recovery phase after mild to moderately severe acute pancreatitis, enzyme secretion was depressed with the major reduction being in the amylase values. If irreversible damage to the pancreas took place, both enzyme and bicarbonate levels fell. Following the isolation of pancreozymin,[49] this hormone has been used to assess pancreatic secretory function. Howat suggested the use of pancreozymin in conjunction with secretin, as one is able to stimulate enzyme production as well as secretory volume and bicarbonate output.[50]

Other Laboratory Findings: The white blood count is consistently elevated, ranging between 10 and 30 thousand, and there may be a decrease in the number of lymphocytes.[51] Albuminuria is common, and glycosuria is present in about 10 per cent of the patients.

The blood urea nitrogen frequently is elevated in patients with acute pancreatitis as a result of tubular damage due to the excretion of pancreatic enzymes in high concentration. Elevation of the blood urea nitrogen in the absence of shock is a poor prognostic sign.[16] Elevation of the blood sugar above normal was observed in 31 per cent of our patients, and other reports indicate that the incidence of hyperglycemia may vary from 25 to 66 per cent.[16,52]

The serum bilirubin was elevated in 31 per cent of our patients, with the maximum value being 6.8 milligrams per cent. Jaundice may be related to compression of the common duct by the inflamed swollen pancreas, or to concomitant liver or biliary tract disease. Elevations of the serum alkaline phosphates also have been reported.[53]

Changes in the electrocardiogram may simulate those of coronary occlusion.[58] However, when studied at autopsy, the coronary arteries and myocardium have been found to be normal.[13]

Roentgen Findings in Pancreatitis: Nonvisualization of the gall bladder is observed in approximately two-thirds of patients in whom gall bladder disease subsequently is ruled out by operation or at autopsy.[59,60] The high incidence of concurrent gall bladder disease has been noted. Other roentgen findings include limited excursion of the left side of the diaphragm, pleural effusion, atelectasis of the lung, and irritability and spasm of the duodenal loop.[61,62] Localized paralytic ileus, which is described as an early roentgen sign of acute pancreatitis,[63] was observed in only one of our patients.

Treatment of Acute Pancreatitis

Treatment of acute pancreatitis has the following aims: relief of pain; treatment of shock and correction of electrolyte and fluid disturbances; inhibition of pancreatic and gastric secretion; prevention of infection and peritonitis; management of surgical sequelae; and prevention of recurrences.

Relief of Pain: Relief of pain frequently follows parenteral administration of quaternary amine anticholinergic drugs. These drugs suppress gastric and pancreatic secretion and have a muscular relaxant effect upon the pancreatic ductile system.[64,65,66] Narcotics or epidural block may be necessary for patients with more severe pain.[67]

Treatment of Shock and Fluid and Electrolyte Disturbances: Loss of plasma and red cell mass may result from vomiting, hemorrhagic necrosis, and passage of toxic fluids into the abdomen. Serum albumin and levarteranol are of value in the treatment of shock and the plasma deficit.[68]

Inhibition of Pancreatic and Gastric Secretion: Withholding oral fluid, accompanied by

continuous nasogastric suction, aids in inhibiting the secretin stimulated phase of pancreatic secretion. Concurrent administration of parenteral anticholinergic agents further reduces gastric secretion and depresses both the vagal and secretin stimulated components of pancreatic secretion. Pancreatic secretion also is inhibited following the administration of Diamox®.

Prevention of Infection and Peritonitis: Although pancreatitis initially is an aseptic process, the presence of necrotic material in the abdomen, as well as increased permeability of the bowel to its normal bacterial content, may result in suppurative peritonitis or localized abscess formation. Experimental pancreatitis is favorably modified by treatment with penicillin and streptomycin.[69] Clinical improvement has been reported following administration of broad spectrum antibiotics to patients with acute pancreatitis.

Management of Surgical Sequelae: Surgical treatment may be necessary for management of suppurative complications such as abscesses or for drainage of pseudocysts. Exploratory laparotomy may be indicated during the interim phase of the disease to establish diagnosis and may be necessary for patients with recurrent attacks of pancreatitis.[70]

Efforts at Prevention of Recurrences: Little is known about the efficacy of efforts to prevent recurrences. Empirically, the use of a low fat diet, frequent small meals, avoidance of alcohol and fatty foods, and the use of anticholinergic agents have been recommended.[71] Treatment of concurrent gall bladder disease also is advised.

Other Measures: Other therapeutic measures that have been recommended include the use of adrenal steroids, X-ray therapy, the use of trypsin inhibitors, and drugs to decrease metabolism of the pancreas. Favorable clinical results have been reported based upon uncontrolled studies using adrenal steroids and ACTH.[72-76] However, the use of steroids in pancreatitis may be deleterious. The secretory response following administration of ACTH simulates that observed in patients with acute pancreatitis.[77] Ductile proliferation, acute pancreatitis, and fat necrosis have been observed in patients who have been treated with adrenal steroids.[78]

Radiation therapy also has been recommended to reduce pancreatic function,[79] and propylthiouracil has been suggested to reduce metabolism of the pancreas temporarily during the acute attack.[80]

Prognosis

The mortality rate in our series was nine per cent. Richman reported a mortality rate of 33 per cent.[16] Machella noted a mortality rate of patients treated surgically of 35 per cent and for patients treated conservatively, 20 per cent.[81] The mortality rate in patients developing pancreatitis following abdominal surgery may be as high as 75 per cent.[82] The majority of patients appear to make a relatively complete recovery from pancreatitis if they survive the initial attack. A variable percentage, estimated at approximately 20 per cent, develop recurrent attacks of pancreatitis. Chronic relapsing pancreatitis is more common in alcoholics than in non-alcoholics.

SUMMARY AND CONCLUSIONS

Acute pancreatitis is a relatively common medical problem, carrying a substantial mortality rate. The presenting complaints may be variable although abdominal pain is the most frequent symptom.

The majority of cases of pancreatitis seem to result from a summation of mechanical, secretory, and vascular factors. Alcoholism and biliary tract disease predispose to the development of pancreatitis.

The limitations of the serum amylase determination in diagnosis are noted. Dependence upon an elevation to an arbitrary level excludes from diagnosis approximately half of patients having clinical, laboratory, and operative evidences of pancreatitis. Urinary amylase is a more valuable determination for assessing the severity of pancreatitis. The most useful diagnostic adjunct appears to be the determination of the serum trypsin level. Neither the physical examination nor roentgen findings are of particular help in establishing diagnosis of acute pancreatitis.

Treatment is directed toward relieving pain, correction of fluid and electrolyte disturbances, inhibition of gastric and pancreatic secretion, prevention of infection and peritonitis, management of surgical sequelae, and prevention of recurrences. The value of the adrenal steroids in the management of patient with pancreatitis is

not established and their use cannot be recommended routinely.

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Crisis in education

We are facing great crises in medical education and all of the health care services. These far transcend the individual satisfaction of our particular and personal achievements and present a great responsibility to all physicians.

We need more and better trained physicians at a time when medical education is financially in a straight jacket and when confusion and groping for proper definitions of medical training are going on in the minds of our greatest deans and teachers. How far into premedical years can one successfully start training for medicine? How can the cluttered curriculum be simplified and a trained physician, well grounded in basic science, be produced? *Norton S. Brown, M.D. Retiring Address of the President. New York Med. June 20, 1959.*

The Use of Chlorpromazine in Disturbed Mentally Retarded Children

JANET D. ROWLEY, M.D.,* SHERMAN E. KAPLITZ, M.D.,** AND MARTIN L. SCHWARTZ, M.D.***, CHICAGO

In the outpatient clinic of the Dr. Julian D. Levinson Research Foundation for mentally retarded children we have used several of the tranquilizing drugs in treating selected patients. Our greatest experience has been with chlorpromazine* and the present report will be limited to a series of 54 children who have received this drug.

We were particularly interested in comparing our results with those of Davies,[1] Bair,[2] Esen,[3] Carter,[4] and Tarjan,[5] who reported improvement in institutionalized children treated with chlorpromazine. We also wanted to see if there was any correlation between the electroencephalogram findings and a patient's response to chlorpromazine.

The children in our series had personality disturbances such as hyperactivity, destructive tendencies, undue aggressiveness, and difficulty in sleeping. Treatment of these symptoms with bromides or phenobarbital had been ineffective or unsatisfactory.

The 54 patients ranged in age from 3 to 17 years; intelligence quotients varied from 10 to 85. Later, the I.Q. of two children fell within the normal range.

The most logical cause of the mental retardation in each patient is listed in Table 1.

Table 1 — Etiology of Mental Retardation

Etiology	Number of Patients
Cerebral birth injury	14
Toxemia of pregnancy	2
Rh incompatibility	1
Prematurity	2
Meningitis and/or encephalitis	5
Cerebral dysgenesis or agenesis	18
Developmental anomalies	3
Mongolism	3
Phenylketonuria	1
Maternal diabetes	1
Emotionally disturbed (Psychogenic)	3
Undetermined	1

The children were graded on the basis of the severity of their disturbances. We were aware of the hazards of using the parent's opinion as the prime basis for classification. However, we felt that some classification was necessary to evaluate the action of chlorpromazine on mildly disturbed children as distinct from severely disturbed children.

Twenty children were Grade I: minimally disturbed, having sleeping difficulties, tantrums, short attention span. Seventeen were classified as Grade II: under more tension, misbehaving in school, and somewhat aggressive. Nine were classified Grade III: almost unmanageable in school and something of a threat in the home, both as to danger to other siblings and to property. Grade IV included eight children who were so aggressive and destructive that only one attended school.

In our series, 17 of the children had a history of convulsions, although only six were currently having them. Forty-six of the 54 patients had electroencephalograms taken at some time. Twenty patients had normal electroencephalograms (of which two were described as borderline normal), 12 had electroencephalograms showing spikes or seizure discharges, 11 had electroencephalograms showing 14 and 6 per second positive spike discharges,[6] and three patients had atypical frequencies in the electroencephalograms. Fifteen of the children treated with

Chlorpromazine (Thorazine®)—Kindly supplied by Smith, Kline & French Laboratories, Philadelphia.

*Janet D. Rowley, M.D., Research Associate, Dr. Julian D. Levinson Research Foundation for Mentally Retarded Children, Chicago.

**Sherman E. Kaplitz, M.D., Medical Director, Dr. Julian D. Levinson Research Foundation for Mentally Retarded Children, Chicago; Attending Neurologist, Cook County Hospital and Oak Forest Hospital.

***Martin L. Schwartz, M.D., Chief of Staff, Dr. Julian D. Levinson Research Foundation for Mentally Retarded Children, Chicago.

Table 2 — Relationship of Response of Chlorpromazine to Initial Behavior

Initial Behavior	Response				
	Worse	No Change	Moderate Improvement	Marked Improvement	Total
Grade I	3(15%)	5(25%)	5(25%)	7(35%)	20
Grade II	2(12%)	5(29%)	7(41%)	3(18%)	17
Grade III		4(44%)	1(12%)	4(44%)	9
Grade IV		4(50%)	3(38%)	1(12%)	8

chlorpromazine also were on anticonvulsant medication (sodium diphenylhydantoin,* primadone,** or methyl-phenyl-ethyl-hydantoin.***)

Dosages of chlorpromazine were varied for each patient on a trial and error basis, until an appropriate effect was obtained or the drug was discontinued. Dosages ranged from 30 to 800 mg. per day; the majority received 30 to 75 mg. per day. Some have received this medication for up to 2½ years.

The value of the drug was assessed in the majority by subjective reports from the parents. Improved behavior was observed clinically by the staff or teachers at school; in 15 it was marked, and in 16, moderate. There was no change in behavior in 18 and five were considered worse. Twenty-seven children are still receiving the medication. The group of children showing the greatest improvement included two mongoloids, four postmeningitic and/or postencephalitic patients, four with cerebral birth injury, and five with cerebral dysgenesis or agenesis.

As can be seen from Table 2, a favorable response to chlorpromazine seemed to occur about equally in all four categories of behavior disturbance.

There seems to be no consistent correlation between behavior change and electroencephalogram findings as presented in Table 3.

We did not measure the patient's I.Q. routinely before and during medication. One patient (case #35)* who showed a poor response to the drug has had a progressively higher I.Q. Case #25 had an increasing I.Q. and a good response to medication. Eight children showed somewhat lower I.Q.'s when placed on medication, independent of their response to medication when measured by behavior change. We cannot confirm the results of Bair,[2] Esen,[3] and Tarjan[5] who noted improvement in the mental functioning of their patients.

Two somewhat undesirable side effects of chlorpromazine were noted during this study:

(1) Drowsiness or fatigue was noted in 9 patients. In one, the effect was counteracted by adding dextro-amphetamine sulfate and amobarbital. In three, the depressant effect was so marked the parents discontinued chlorpromazine.

(2) Convulsions occurred for the first time in two patients started on chlorpromazine and increased in frequency in two other patients. One child (case #43) had had no convulsions but he was getting diphenylhydantoin sodium for an

*Available as Dilantin®, Parke Davis & Co., Detroit, Mich.
**Available as Mysoline®, Ayerst Laboratories, New York.
***Available as Mesantoin®, Sandoz Pharmaceuticals, Hanover, N. J.

Table 3 — Response to Chlorpromazine Compared with Electroencephalogram Findings

Behavior Change	Electroencephalogram Results			
	Normal	Abnormal	None	Total
Worse	3	2 (1 seizure discharges (1 — 14 & 6	0	5
Same	6	8 (5 — seizure discharges (3 — 14 & 6	3	17
Moderate Improvement	3	11 (4 — seizure discharges (5 — 14 & 6 (2 — atypical frequencies	3	17
Marked Improvement	8	5 (2 — seizure discharges (2 — 14 & 6 (1 — atypical frequencies	2	15

abnormal electroencephalogram (14 and 6 per second positive spikes). After taking chlorpromazine for two weeks, in addition to diphenylhydantoin sodium, his only convulsion occurred. No change of behavior was noted during the two week period. The second child (case #4) with a normal electroencephalogram had two closely spaced convulsions; the drug was discontinued for a week and then was given along with phenobarbital. A third convulsion occurred. Medication was again discontinued but the child's behavior became so unmanageable we reinstituted chlorpromazine, this time with diphenylhydantoin sodium. No additional convulsions have occurred. The third child (case #15) with a borderline normal electroencephalogram, whose seizures were well controlled by phenobarbital began having seizures soon after adding chlorpromazine although behavior was improved. The addition of methyl-phenyl-ethyl-hydantoin to the chlorpromazine and phenobarbital has kept him free of seizures. The fourth child (case #54) whose electroencephalogram showed both petit mal and grand mal was having frequent seizures despite a variety of medication. He had severe convulsions intermittently for several days following a single 25 mg. tablet of chlorpromazine.

DISCUSSION

Many children who are mentally retarded also have emotional difficulties, such as antisocial behavior, which often cause grave problems for parents who have to manage mentally retarded children. Mentally retarded individuals, especially those falling in the educable class, can make a contribution to society if their behavior is relatively stable. Chlorpromazine in our experience has been effective in treating the hyperactivity of some mentally retarded children.

Gatski,[7] Hunt,[8] and Freed,[9] reported more improvement in emotionally disturbed children when given chlorpromazine than we noted in our patients with mental retardation. Our results are more in agreement with those reported by Freedman.[10]

At present, it is not possible to predict a patient's response to chlorpromazine. From the limited material available from this study, children with a frank brain injury seem to respond more favorably to medication than those whose mental retardation seems to be due to a lack of brain development.

The most serious side effect of chlorpromazine has been the occurrence or increase in frequency of convulsions in four children. This complication has been noted by Tarjan[5] and others. It is interesting to speculate on this reaction in light of the work reported by Bonnycastle[11] who found that anticonvulsants increased the serotonin (5 hydroxy tryptamine) levels in rat brain. Chlorpromazine is a serotonin antagonist. Possibly chlorpromazine causes convulsions in an occasional patient because of its antiserotonin action.

SUMMARY

Chlorpromazine in doses ranging from 30 to 800 mg., but usually on the order of 50 mg. a day, was given to 54 disturbed mentally retarded children. Thirty-one (57 per cent) showed improved behavior, which was marked in 15 (28 per cent.) Fifteen children with abnormal electroencephalograms also received anticonvulsant medication during the trial with chlorpromazine. Nine became drowsy on chlorpromazine. First convulsions occurred in two patients and increased convulsions occurred in two other children.

It is not possible at present to predict which patients will respond favorably to chlorpromazine.

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Phenylbutazone

EUGENE F. TRAUT, M.D., CHICAGO

Phenylbutazone (Butazolidin®) is a much more effective antirheumatic than any previously used drugs with the exception of the steroids. Its chemical structure, medical use, and even its harmful potentialities resemble those of aminopyrine. Its anti-inflammatory, analgesic effects are so specifically skeletal as to justify the adjective antirheumatic.

Phenylbutazone enters joints, the concentration in the synovial fluid being 50 per cent of that in the serum. It does not lower the sedimentation rate nor reduce the C-reactive protein. The drug does not exert its antirheumatic effect via the hypophyseal-adrenal axis. Hypophysectomy or adrenalectomy does not modify its therapeutic action. It promptly reduces hyperuricemia.

According to some, its effect resembles that of probenecide. It blocks reabsorption of urates in the tubule. Its urate reducing effect is in direct proportion to the amount of uric acid in the plasma. Some have failed to find an increased urate excretion.

Its other physiologic effect, undesirable enough to be termed a side reaction, is the retention in the body of sodium chloride and water. During the administration of phenylbutazone, glomerular filtration is normal but the reabsorption of sodium chloride in the tubule is accelerated, to be followed by a corresponding increase in the reabsorption of water. Usually, hypernatsemia and edema can be controlled easily and promptly by withholding table salt. Occasionally these conditions precipitate or intensify congestive heart failure, necessitating the use of diuretics.

Two other and more serious side effects are bone marrow depression and ulcerogensis. The formula of phenylbutazone includes the benzene rings so frequently associated with damage to hematopoietic tissues. The relation of phenylbutazone to the formation or aggravation of gastric or duodenal ucler is recognized but is poorly understood. The literature is replete with instances of ulcer reactivation characterized by abdominal distress, upper gastrointestinal bleeding, or even fatal perforation following administration of this drug. Almost one-half of the patients experience some sort of abdominal discomfort while taking phenylbutazone. In my experience this cannot be prevented by antacids or diet however meticulously prescribed or conscientiously taken. Neither hydrochloric acid nor pepsinogen have been found consistently elevated in patients taking phenylbutazone. Peptic ulcer may occur even in patients with achlorhydria. It is said that gastronintestinal side effects do not occur with parenteral or rectal administration of the drug.

Most of the deaths attributed to phenylbutazone have been due to granulocytopenia or agranulocytosis. The blood findings may cover the whole range of granulocytopenia, thrombocytopenia, agranulocytosis, and pancytopenia.

Among the mildest toxic effects of this drug is an erythematous rash, which usually appears first over the neck or the upper part of the thorax. Itching may be present. There have been a few reports of exfoliative dermatitis associated with its use.

Toxic reactions have been ascribed to hypersensitivity. When widespread, the common denominator has been angiitis, resulting in widespread necrosis. Such tissue reactions are unpredictable and not necessarily related to the size of the dose or duration of treatment. They have appeared weeks after discontinuing the drug. Keeping the daily dose of the drug at 800 mg. or less has resulted in fewer reactions.

Despite the impressive list of uncomfortable and even fatal reactions attendant upon taking the drug, it remains a valuable addition to the treatment of rheumatic disease.

Director, Arthritis Clinic, Cook County Hospital.

In my experience, the drug is most effective in acute gouty arthritis and least effective in rheumatoid arthritis. The patient with acute gouty arthritis, particularly in one of his early episodes, can be assured of great relief within 24 hours and of complete subsidence of discomfort within 48 hours. I commonly ask such a patient to take 200 mg. of phenylbutazone each six hours for six doses. I also must admit to bolstering this dose by the injection of 40 mg. of corticotropin in repository form at the onset of the attack and 12 hours later. I lower the daily dose of phenylbutazone by 200 mg. each two days until cessation. Because of its toxic potentialities I do not prescribe phenylbutazone for interval gout nor for chronic gouty arthritis.

The success attending the administration of phenylbutazone to patients with ankylosing spondylitis (Strümpell-Marie disease) makes the leukemia risk of X-ray treatment unnecessary. In patients with spondylitis, the drug is given in doses as small as 100 mg. daily for many months.

Phenylbutazone has proved helpful in the treatment of the periarthritic shoulder syndromes (tendinitis, bursitis, capsulitis.) It also gives relief in other rheumatic syndromes involving largely soft tissue such as the low back syndrome (lumbago). Degenerative arthritis of the vertebrae and of the knee respond satisfactorily. Phenylbutazone in moderate dosage has made life tolerable for patients with carcinomatous metastases to bone. It is effective in treating the arthritis of rheumatic fever but it should not replace salicylates in this disease. Superficial phlebitis improves visibly, within hours, when treated with phenylbutazone. Contrary to the usual concepts, Charcot joints may be the seat of considerable pain. Pain in the joints must be differentiated from the lightning pain of tabes. Phenylbutazone has yielded satisfactory results as therapy for pain in and about Charcot joints.

In my experience, phenylbutazone has had the highest failure rate in rheumatoid arthritis. After repeated failures, I no longer use it as the only or principal drug in treating this form of arthritis. I am currently using it together with steroids in treating the rheumatoid arthritis of disseminated lupus erythematosus.

It has never failed to activate a pre-existent peptic ulcer. Meticulous medical management will not prevent such activation. This potentially toxic drug should not be used in any patient known to have or suspected of having a bone marrow deficiency. It is contraindicated in potential or existing heart failure. A patient is never given more than enough phenylbutazone for two weeks. All prescriptions carry "Do not refill" warnings.

Treatment of any side effects depends upon their kind and severity. The appearance of mild swelling of the legs may require more strict avoidance of salt. Bothersome edema in spite of salt restriction necessitates the use of chlorothiazide temporarily or during the use of phenylbutazone. Slight erythema about the neck can be treated by reduced dosage. If redness increases, stop the drug. Exfoliative dermatitis necessitates withdrawal of the drug and the use of steroids in liberal doses.

We make survey smears of the blood, weekly at first, then each two weeks. The smears are stained with Wright's stain and examined for the quality of the red staining of the erythrocytes (anemia), shape and size of the red cells, the number of platelets, the relative number of leucocytes, and the relation between granulocytes and mononuclear cells. Upon discovery of diminished platelets or granulocytes, phenylbutazone is withdrawn and a complete blood count is made every three days until a normal hemogram is obtained. In spite of treating hundreds of patients, we have never encountered anything worse than a deteriorating hemogram. Prompt withdrawal of the drug has always led to a normal blood picture. Marked bone marrow changes, severe granulocytopenia, or thrombocytopenia would necessitate, beside withdrawal of phenylbutazone, vigorous and immediate and adequate combiotics and steroids. Blood transfusion may be required.

Demonstration or even suspicion of ulcer may require withdrawal of the phenylbutazone. Routine or modified ulcer management may be tried to control the symptoms and even heal a demonstrable ulcer without withdrawal of the drug. The undertaking of this calculated risk depends upon the urgency of the joint condition. If the ulcer is gastric and does not respond promptly to medical care it should be excised.

My usual dose for an adult of average or large size with marked disease is 800 mg. daily (200 mg. after each meal and at bedtime). The drug is stopped if there is not outstanding, unequivocal

improvement within 72 hours. With improvement, the dose is reduced to 600 mg. (200 mg. after each meal) on the third day; 400 mg. (100 mg. after each meal and at bedtime) on the sixth day; and to 300 mg. on the twelfth day. Reductions thereafter depend upon the status of symptoms and findings. Usually the patient will be well enough to maintain improvement on 200 mg. daily (100 mg. morning and night) on the sixteenth day and 100 mg. daily for an indefinite time thereafter. In acute gouty arthritis, the drug can be discontinued in one week.

I ask all patients taking the remedy to avoid salty food and use no salt at the table. If they become edematous I have them avoid salt in cooking. I may give chlorothiazide for an obvious edema.

Salicylates are given coincidently and continuously up to tolerance in all the above conditions. Prednisolone often is used in degenerative arthritis as well as in rheumatoid arthritis. In addition, each patient is guaranteed access to the many measures currently available to eliminate the joint disease or at least its progress and symptoms. These include instruction in mental and physical hygiene, traction, exercises, braces, heat and massage, and removal of suspected focal infections.

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Tension pneumothorax

The relief of a tension pneumothorax requires no special apparatus. Frequently the insertion of a needle into a tention pocket will be followed by the plunger's blowing out of the syringe by a rush of the escaping air which will continue until the excess pressure is relieved. The rule is that a tension pneumothorax tends to recur and consequently one must make provision for repeated decompression by inserting a small catheter in the second anterior interspace in the midclavicular line and connecting it to an underwater breakover so that any accumulating pressure will be dissipated through the water seal. The insertion of a catheter at the base posteriorly is proper for the removal of fluid but soon plugs with fibrin and does not remove the airpocket which forms anteriorly. If both fluid and air must be removed, two catheters should be used. A constant, negative pressure suction pump with very low negative pressure of 1 or 2 cm. of water may be substituted for the under-water breakover. Traumatic pneumothorax may occur bilaterally and must be recognized and relieved promptly or the patient may succumb rapidly. Pneumothorax may not be present when the patient is first seen but may develop insidiously hours afterwards or dramatically after an episode of coughing or straining. *Thomas J. Kinsella, M.D. Chest Injuries from Automobile Accidents. Minnesota Med. June 1959.*

Essential Hypertension and Obesity

NANDOR SZENT-GYORGYI, M.D., CHICAGO

It is an age old belief, based on experience, that obese people develop apoplexy more frequently than do thin individuals, and the related idea that there is a connection between obesity and hypertension has persisted. Many investigators have tried to prove or disprove these concepts. The nature of the relationship between essential hypertension and obesity still is not conclusively determined. However, the solution of this problem would be of great practical importance.

The correlation between the two diseases emerges more and more clearly from the medical literature of the last three decades. Reliable mortality statistics comparing the relative longevity of the normotensive nonobese, the normotensive obese, the hypertensive nonobese, and the hypertensive obese should help in our understanding. Comparison of the survival rate of underweight hypertensives and obese normotensives would be further aid. The duration of the nutritional state and hypertension also would be valuable.

There are different definitions of obesity and of essential hypertension. The most generally accepted criteria for obesity are the Metropolitan Life Insurance Company's ideal weight tables and the Broca formula.[1] The disagreement is greater concerning criteria for hypertension; however, blood pressure readings above 140/90 mm. of mercury usually are considered elevated.

Objections have been voiced regarding blood pressure measurement by the indirect (auscultatory) method on the supposition that the obese arm yields higher values. Among others, Boe and co-workers[2] expressed the opinion—based on 69,976 determinations—that an extremely obese arm will give only a slightly higher reading. To correct this alleged discrepancy, a wider arm-cuff has been recommended. Pickering advocated introducing a correction number for arm circumferences in comparison within large groups, but doubted the usefulness of correction in individual readings.[3] However, recent investigations of Van Bergen et al.[4] revealed that indirect measurement of blood pressure never exceeded the directly measured (intra-arterial) blood pressure, and the indirect measurement is increasingly lower than the direct reading as blood pressure rises. The latest report on this subject by Whyte demonstrated no relationship between blood pressure and arm circumference.[5] Clearly, criticism of the correlation between obesity and essential hypertension on the basis of unreliability in the auscultatory method is not valid.

The true correlation between essential hypertension and obesity has further aspects. Although Boe et al. hold the opinion that elevation of blood pressure seldom is caused by obesity, there is overwhelming evidence that blood pressure is proportionate to weight, and that increasing weight increases the blood pressure.[5] Many reports have indicated that undernourishment decreases blood pressure independent of sodium metabolism; after a reducing diet, the blood pressure in essential hypertension decreases or returns permanently to normal. Among others, Pickering reported that during World War II in countries where there was starvation, the blood pressure as well as weight decreased.[3]

Although obesity as the etiological factor of essential hypertension still is unproved, there is no doubt that essential hypertension is more frequent among obese than non-obese subjects. In

Assistant Professor of Medicine, The University of Chicago.

While the Nutrition Committee of the Chicago Heart Association is sponsoring this article, the opinions expressed are those of the authors and do not necessarily represent the official view of that committee.

a recent study of a young adult population, 11.3 percent of the obese, and 4.9 percent of the nonobese were found to be hypertensive. This means more than twice as many hypertensives among the obese as among the nonobese. Highly significant differences were found in the incidence of obesity among normotensives and hypertensives, the ratio being 26.5 and 47 per cent respectively.[1]

Long series of life insurance company statistics unequivocally reveal that prolonged overweight shortens life expectancy, and increases the incidence of death from cardiovascular diseases. Conversely, longevity increases with underweight. Numerous reports support the association of hypertension and obesity, with an increased risk of coronary disease. Mortality from essential hypertension is more frequent in the obese than in the nonobese population. Transient hypertension or overweight at a young age predisposes to the development of permanent hypertension. Obesity or essential hypertension, each by itself, shortens life expectancy. The coexistence of the two conditions must have an additional effect on the mortality curve, increasing the probabilities of complications, causing disability at an earlier age, and shortening further the life expectancy.

The causes of hypertension and obesity may include several factors, of which many are probably common to both. For example, the possibly interrelated and equally important factors of heredity, environment, hormones, diet, and civilization with its accompanying inactivity, sedentary life, and emotional frustrations may play a role.

The conclusion can be stated that essential hypertension is more frequent in obese than in nonobese persons and that obesity aggravates essential hypertension. Blood pressure generally is proportionate to body weight, and weight reduction lowers the previously elevated blood pressure. Obesity and essential hypertension, each by itself, shortens life expectancy and the existence of the two conditions decreases it. Although there is no proof that obesity is the real and sole cause of hypertension, the observation that weight reduction proportionately decreases the blood pressure speaks for obesity as a contributing factor. It is not established that weight reduction improves the prognosis of essential hypertension[3] but it is known that persons whose weight is normal or below live longer. Therefore, normal weight is strongly desirable. The pure effect of obesity on blood pressure may be overestimated, but the consequences of the coexistence of essential hypertension and obesity are grave.

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Shock of Cardiac Origin

Robert P. Gilbert, M.D., Evanston

Cardiogenic shock, seen most commonly as the result of an acute myocardial infarction, has been of particular interest these last few years as powerful pressor drugs have become available. No spectacular advances have been made toward its successful treatment, and most patients with shock from acute myocardial infarction still die from the underlying disease. Nonetheless, intelligent and meticulous care can save some patients who would otherwise die. Before starting treatment it is of first importance to be certain that the type of shock is cardiogenic. It is equally important to know the cause of the cardiac disorder. Therefore, I would like to consider four topics:

1. The pathogenesis of cardiogenic shock as contrasted to the pathogenesis of other types of shock.
2. The circulatory events in cardiogenic shock.
3. The recognition of cardiogenic shock and its clinical characteristics.
4. Its treatment.

1. The pathogenesis of cardiogenic shock is contrasted with that of other types of shock in Table 1. In cardiogenic shock the venous return to the heart is adequate. The low cardiac output is due to the heart's inability to pump adequate amounts of blood into the arteries, even though sufficient venous blood is available.

2. The main circulatory events in shock of cardiac origin are listed in Table 2.

It is difficult to name a blood pressure value below which shock may be said to exist, and above which it is absent. Thus, a patient who has had hypertension and whose pressure falls to 100/80 after a myocardial infarction may appear to be in shock, when his sensorium is dulled, his extremities are cold and pale, and his pulse is rapid and thready. It is worth mentioning as an aside that femoral arterial pressures recorded directly often are considerably higher than the pressures determined by a sphygmomanometer

TABLE 1

Pathogenesis of Shock

1. Poor return flow of blood to the heart resulting in a low output (the heart itself is capable of full function).
   a) Blood volume too low
      Hemorrhage
      Dehydration
      Severe Burns
   b) Blood volume essentially normal, but not all of blood available
      Bacteremic shock
      Irreversible normovolemic shock
      Venous dilatation as from an overdose of a ganglionic blocking drug
2. Return flow of blood to heart adequate but heart not capable of full function and output low (cardiogenic shock).
   a) Acute myocardial infarction
   b) Cardiac tamponade
   c) Terminal heart failure
   d) Arrhythmia
   e) Myocarditis
   f) Ball valve thrombus or tumor occluding mitral orifice
3. Pulmonary embolism
4. Combinations of 1 and 2
5. Peripheral vasodilatation

TABLE 2

Circulatory Events in Cardiogenic Shock from Acute Myocardial Infarction

1) Low arterial pressure
2) Low cardiac output
3) Peripheral vasoconstriction (increased TPR) in most cases
4) Circulation time prolonged
5) Venous pressure usually elevated (pulmonary venous pressure probably always elevated)
6) Blood volume normal or increased
7) Tachycardia usually

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Director of Education and Research, Evanston Hospital and Assistant Professor of Medicine, Northwestern University Medical School.

on the arm. Of course, this does not diminish the clinical significance or usefulness of blood pressures as ordinarily determined.

In most instances where it has actually been measured, the cardiac output has been very low.[2-5] All clinicians, however, are familiar with the patient who faints, or who recovers spontaneously from a limited period of hypotension after an infarction. The cardiac output might be normal or high in such cases. Stead[6] reported a patient whose output was 5.3 liters per minute despite a blood pressure of only 66/44. Lee[7] was surprised to find cardiac outputs within the normal range in two patients who had been in circulatory collapse on admission but who had normal arterial pressures during the output determination.

Although there usually is over-all vasoconstriction, or an increase in the calculated total peripheral resistance, this is not always the case, as has been pointed out by Agress[8]. In five of 14 cases reported in the literature there was no evidence of over-all vasoconstriction. This suggests a vasodilating influence in those cases, since there should have been not only reflex vasoconstriction from the carotid sinus and aortic arch receptors, but also narrowing of the peripheral vessels as a result of decreased flow and distending pressure.

It is likely that the central venous pressure is always elevated in cardiogenic shock, though the pressure in the antecubital vein may not always be high. We found peripheral venous pressures of 179, 220, 65, and 175 mm. of saline in four patients in shock from an acute myocardial infarction. Lee[7] noted the external jugular veins to be distended in 11 of 12 instances of acute myocardial infarction.

3. The recognition of cardiogenic shock depends heavily upon recognition of one of the causes of cardiogenic shock listed under heading 2 in Table 1. A patient who is in shock and who has a history and findings typical of acute myocardial infarction, presumably is suffering from cardiogenic shock due to acute myocardial infarction. Even in this situation be alert for a mixed pathogenesis. For example, occult bleeding in an individual with coronary artery disease can produce both shock and myocardial infarction secondary to the shock.

Whatever the cause of the heart disease, the following findings are helpful in identifying shock as cardiac in origin:

A. High venous pressure. This may be gauged most easily by inspection of the neck veins in a semi-sitting position. A clearly elevated venous pressure in a patient who is in shock is almost pathognomonic of cardiogenic shock (in the absence of superior caval obstruction).

B. The finding of pulmonary congestion and edema in a patient in shock.

C. Absence of other reasons for shock: no reason for a low blood volume; no evidence of infection or acute adrenal insufficiency.

4. The proper treatment of cardiogenic shock is dependent upon the accurate identification of its cause. When arrhythmia or acute cardiac tamponade is responsible, specific therapy is possible. A consideration of the recognition and management of all the cardiac disorders that can produce shock is beyond the scope of this discussion. A correct diagnosis will be taken for granted and certain aspects of the treatment of shock from acute myocardial infarction will be considered.

The management of shock in these patients is reasonably started with accepted measures: bed rest, oxygen (preferably by mask, if tolerated), reassurance, and control of pain. Narcotics for pain in a patient in shock should be given intravenously and in a small dose, which may be supplemented if found inadequate. The usefulness of aminophylline or the xanthine drugs in the patient with shock is uncertain.

Should the blood pressure not rise after these simpler measures, or should it be exceedingly low as treatment is commenced, the use of pressor drugs or of digitalis glycoside should then be considered. There are two big problems to be considered in their evaluation. Theoretically, there is the danger that elevating the arterial pressure, by increasing cardiac work, will place an intolerable burden on an already damaged heart. Opposed to this is the knowledge that prolonged severe hypotension is fatal by itself, and that permanent damage can be inflicted on areas of the heart and brain when the arterial pressure is so reduced that it cannot drive enough blood through narrowed and diseased vessels.

Since there is no experimental counterpart for clinical coronary artery disease, the final evaluation of therapy depends upon the study of patients. There is no study on the treatment of

shock in acute myocardial infarction in which results of a given treatment in one group of patients can be contrasted to the results without that treatment in a strictly comparable group of patients. It is the clinical impression of most workers, however, that pressor drugs are of value and save some patients who would otherwise die. The mortality rate without pressor drugs has been reported in various series of cases as between 70 and 90 per cent. Agress[8] found the mortality rate in patients treated with levarterenol averaged 60 per cent for 131 patients collected from 10 series including his own. He showed also that the mortality rates in these different series varied from 14 to 86 per cent. Such a degree of variation must result from tremendous differences in the gravity of the cases seen by various workers, and emphasizes the lack of proper controls. In two patients in whom we attempted to measure the change in cardiac output after levarterenol, we found if anything a decrease in output, despite a clear pressor effect. Both patients died. The details of pressor therapy are given in various reviews.[8]

Since shock from acute myocardial infarction may be regarded as resulting from myocardial weakness, the use of digitalis has some theoretical justification. Gorlin and Robin[9] have described encouraging results in series of five patients who received a rapidly acting glycoside. Half the usual dose had a therapeutic effect and more than this could produce toxic effects, so that if tried, it should be given in small doses, to be repeated if advisable.

Adrenal cortical hormones probably are of no value.[8] There is no theoretical basis for the use of transfusions and their clinical effects have not been encouraging.

SUMMARY

Shock of cardiac origin differs from other types of shock in that the venous return flow to the heart is adequate. The diseased heart, however, is unable to maintain an adequate cardiac output. The blood pressure is low, there is peripheral vasoconstriction, a prolonged circulation time, an elevated venous pressure, and a normal or increased blood volume.

Clinically it is characterized by the evidences of specific cardiac disease and an elevated venous pressure in the presence of shock. Pulmonary congestion or edema is a common finding.

Treatment depends to a great extent upon the correct diagnosis of the specific cardiac disease. The use of pressor drugs and digitalis glycoside is considered.

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Clinical–Surgical Conferences

Tetanus

Department of Surgery
Cook County Hospital

Moderator:
ROBERT J. FREEARK, M.D.
Director of Surgical Education
Cook County Hospital

Discussants:
MEYER A. PERLSTEIN, M.D.
Associate Professor of Pediatrics, Northwestern University Medical School; Chief of Pediatric Neurology Clinic and Tetanus Team, Cook County Hospital
MICHAEL STEIN, M.D.
Fellow in Neuropediatrics, Cook County Hospital

Dr. Robert J. Freeark: The development of tetanus in a patient is a complication that fortunately befalls few physicians. The extreme rarity with which we encounter this condition, however, serves to make its occurrence all the more tragic. This disease has a high mortality rate but is almost 100 per cent preventable. Its occurrence invariably means someone has erred. It may have been the pediatrician, who omitted the standard childhood immunizations, the patient who failed to seek medical aid for an insignificant wound, or the surgeon who did not wish to risk a reaction to the horse serum antitoxin after suturing a laceration. Without an omission somewhere along the line, there would be little need for a conference on tetanus such as we are having. Tetanus is still with us at the Cook County Hospital. Over 200 cases have been treated in the last 18 years. The condition has occurred on our own wards as well as in patients referred from other hospitals throughout the state.

The wound of entrance for this infection is detailed in Table 1. The predominance of patients who developed tetanus as a result of narcotic addiction is an experience that is unusual. The other wounds are of a diverse nature and offer considerable food for thought to physicians and surgeons entrusted with their care.

Two recent experiences with tetanus at Cook County Hospital are presented today. To discuss them, we have a panel of experts from our own staff. Dr. Perlstein and Dr. Stein have been tireless workers on the Tetanus Team here at County for a number of years. Also with us

TABLE 1

Presumed source of infection in 115 cases of Tetanus
Cook County Hospital 1953 - 1959

Needles (Narcotic Addicts)	73
Lacerations	17
Burns	6
Gangrene (Arteriosclerotic Diabetic Frostbite)	4
Nails (Puncture Wounds)	2
Abrasions	4
Abscessed Teeth	2
Open Fractures	3
Wood Stick (Puncture Wound)	1
Gynecologic (Pyometritis)	1
Source Unknown	2

today are several other members of the hospital staff who have provided invaluable assistance in the care of these patients and we hope to hear from all of them during the course of the discussion.

Case 1:

Dr. Fabian Udekwu (Surgical Resident): This 33 year old Negro female fell into an open manhole while going to a launderette on the morning of February 20, 1959. She sustained a long, deep laceration of the lateral aspect of the right calf just below the knee. She was rushed to a nearby hospital where she received an injection that was said to be antitetanus serum but this could not be confirmed on subsequent investigation. Following application of a sterile dressing she was transferred to Cook County Hospital.

On admission, the patient's general health appeared excellent and general physical examination disclosed no abnormalities other than the laceration mentioned above. The wound was approximately 8 cm. in length and extended through the skin, fascia, and superficial muscles of the lateral calf. There was no evidence of neurologic or vascular damage in the involved extremity, and wound care was undertaken shortly after admission. The area adjacent to the wound was first carefully shaved and scrubbed with soap and water for 10 minutes. The wound itself was next exposed and subjected to careful debridement and cleansing, utilizing copious saline irrigations. The general appearance of the wound was excellent and primary closure in layers was completed approximately four hours after the injury. Small amounts of 1 per cent procaine had been injected into the wound as a local anesthetic, and the patient was placed at bed rest without antibiotic or additional antitetanus treatment.

On February 25, five days after surgery, the wound was observed to be tender, inflamed, and grossly infected. The sutures were removed and the wound debrided and left open. On February 27, the patient developed dysphagia and mild trismus. On February 28, she was seen by a member of the Tetanus Team and transferred with a diagnosis of tetanus. Shortly thereafter full-blown symptoms of tetanus developed with nuchal rigidity, rigid abdomen, marked increase in lumbodorsal muscle tone, and brief generalized muscle spasms.

Dr. Freeark: I want to emphasize that this was a rather routine "County" laceration. There was nothing particularly unusual about it, and it was not unlike many similar injuries that are handled every day in the surgical wards and outpatient departments of this hospital. In many respects, the local wound care was far better than that given many similar lacerations treated in outpatient clinics throughout this state. The wound care in this case was supervised by the resident and was optimal in terms of debridement and irrigation. The wound appeared clean after the cleansing, and we make no apology for deciding in favor of primary closure. The omission of antitoxin at this institution was based upon a statement of previous treatment made by the patient. We were unable to confirm this, however, after reviewing the records of the referring hospital.

Dr. Meyer A. Perlstein: When tetanus develops, the method of prophylaxis must be evaluated. As you know, this can be accomplished by means of passive immunization, using antitoxin derived from animal serum, or by active immunization using a booster dose of toxoid. The latter method is effective only if the patient has received a properly spaced series of primary toxoid injections within the last 3 to 5 years.

Figure 1 shows the titers of antitoxin in the blood, with various immunization schedules. I think the first important thing to note is that a dosage of 1,500 units of antitoxin is not adequate and this dosage should be dropped entirely. The dose will have to be between 5,000 and 10,000 units of antitoxin, and I think 5,000 is not enough. I would rather give 10,000. Once tetanus has developed, we give 80,000 units because, with this dosage, a level is established that will stay up

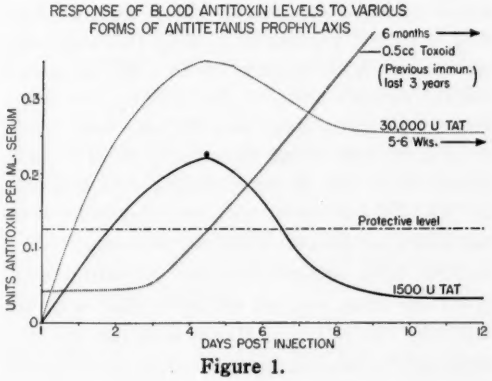

Figure 1.

for several months. Some authorities advocate the use of repeated doses of antitoxin at weekly intervals for badly infected wounds. As indicated in the figure, this appears unnecessary if the initial antitoxin dosage has been adequate. We have discouraged repeated doses of antitoxin because of the increased risk of anaphylaxis or serum sickness. The question of combinations of antitoxin and toxoid for prophylaxis remains unanswered. I have the impression that the addition of antitoxin with toxoid to a previously immunized patient tends to limit the usual response to the toxoid.

There were several interesting things about this first patient. On February 27 she developed her first symptoms — dysphagia and trismus. On the next day, she was transferred to the tetanus ward because of spasm. The general rule is that if spasm occurs within 24 hours after the first symptom, tetanus will be fatal in 90 per cent of the cases. If the seizures begin within the first 48 hours — and I am talking not about the incubation period but about the interval between the onset of the first symptoms and the onset of seizures — the mortality rate is 70 per cent. If it is over 48 hours, between the second and fifth days, then the mortality drops abruptly from 50 to 30 per cent. If you are lucky enough to have a patient who has an interval of over five days, you can expect a mortality of 10 per cent or less. So the mortality rate is dependent upon the interval between the onset of the first symptoms and the first seizure. In this particular patient, a poor prognosis was apparent.

Regarding therapy, we could say in general that if you can keep the patient alive a week, he should recover. This is especially true since the advent of meprobamate which is effective when used intramuscularly in eliminating spasms caused by somatic stimuli. The beauty of this drug is that it permits us to drop the dosage of barbiturates from 25 gr. a day to 1 to 3 gr. a day and the patients are now able to tell you what is wrong with them. Many patients have been killed because we kept them in coma to control their spasms. It is like giving morphine in appendicitis. We have learned of many complaints we were not aware of before. With meprobamate, if the patients have seizures in spite of having been given this drug, you cak ask them what is wrong and they can tell you. Maybe it is the urethral catheter that should be removed, a fecal impaction, or a pulmonary complication. These irritations precipitate spasms and seizures that can be corrected promptly if we know about them.

When I saw this patient I thought she was doing well enough and was going to recover but she did not. She died on the fifth day. She had a tracheostomy and the full tetanus therapeutic regimen. It is our experience, now that we keep our patients awake, that most of the complications are respiratory, such as collapse of the lung or pneumonia due to bronchial obstruction with large plugs of mucus. What killed this patient I do not know. I think many of our deaths from tetanus are nursing deaths or deaths preventable by the proper type of nursing care. One thing of paramount importance is assistance from the anesthesiology department. You need someone who can give complete respiratory care and instruction. Nurses should be trained in the care of the tracheostomized patient and the detection of early respiratory distress.

If a patient with tetanus dies within the first or second day after onset of symptoms, death usually is due to asphyxia or circulatory collapse. There may be marked atelectasis of a lung with secondary infection or some other complication, but a large number of them die for reasons as yet unknown. They simply develop dysrhythmia of breathing and pulse and pass out as they do with bulbar poliomyelitis. The cause of death in these patients often remains obscure.

Dr. Freeark: This was purely a surgical problem originally and I would not like to let it get by without considering some of the surgical aspects. The concept of the puncture wound as a precipitating factor in the development of tetanus has been belabored to the point where this wound is getting better prophylaxis all the time. Yet our experience here indicates that modern tetanus seldom is caused by a puncture wound. A wide variety of other wounds has been responsible. For the benefit of the surgeons, Dr. Perlstein, if we encountered a badly infected wound in a patient with tetanus, how much and what type of wound care should be given, and does it affect the ultimate result once the disease is established?

Dr. Perlstein: I had better let you surgeons handle the question of the wound. There are some who advocate wide excision or even amputation, while others prefer to treat the wounds as any

other and incise only if fluctuation exists. What have you been recommending?

Dr. Freeark: Our feeling is that whenever possible, the wound should be excised. If that cannot be done, then debridement of all nonviable tissue and elimination of all dead space are essential. The principle is to convert an anaerobic wound ito an aerobic one. The application to the wound of some oxygenating compound, such as zinc peroxide, seems advisable.

Dr. Perlstein: If an adequate dose of antitoxin is given, even if you do not get rid of spores you have protected the patient temporarily and you can give additional therapy. Once tetanus has started, however, antitoxin probably has little effect upon the course of the disease. Penicillin appears to be the most efficacious antibiotic for these infections, although culture and sensitivity studies are difficult to obtain.

Dr. Freeark: The most common problem facing the interns and residents on the surgical wards is the patient who demonstrates a degree of allergy to skin testing using a dilution of antitoxin. What should we do in such a case — omit the dose of antitoxin or take a chance that the allergy is not severe?

Dr. Perlstein: If I had a patient with tetanus who had a positive skin test, I would not deny that patient antitoxin. I would use the ordinary technique for desensitization—specifically, small gradually increasing doses. But I would certainly give him the antitoxin. I might cover it with adrenalin or cortisone but I would give it. For prophylaxis in the allergic patient, you have to use your judgment as to whether this is likely to be a wound contaminated with tetanus organisms. If it occurs in a farmer, then give it to him prophylactically. If it happened to a child in his home and there appears to be good control of his infected area locally — and the boy is a severe asthmatic with a strong allergic history — then I think I would give toxoid or nothing at all.

Dr. Freeark: That seems reasonable but what we would like to know is what to do with the asthmatic child who got his wound in a stable and did not receive his primary immunization as an infant?

Dr. Perlstein: I would give him the antitoxin but I would use the desensitization technique.

Dr. Joseph Greengard (Director, Pediatric Education, Cook County Hospital): All of us who have practiced for a long time have had experience with tetanus and our attitude is influenced by our experience. I had a case of serious tetanus in a child who had had a burn, and whose physician gave him 1,500 units of antitoxin with subsequent urticaria. The child was told by that physician never, under and circumstances, to let anybody give him another dose of tetanus antitoxin. Some years later, this boy fell off his bicycle and sustained an open fracture of the forearm. The mother told the attending physician of the previous physician's advice and antitoxin was not given. The boy got tetanus and died in about four weeks. So I think you are taking a terrible chance if you do not give it.

I feel bothered about the usually recommended dosage and about the occasional omission of prophylactic antitoxin. At least 5,000 units of antitoxin should be given. As to the use of toxoid, I did some work on this in the early days of diphtheria immunization which demonstrated that freely circulating antitoxin interfered with the development of active immunity on attempted vaccination with toxoid. The degree of interference depends upon the potency of the antigen or toxoid. However, we disregard this pretty much in our routine immunizations. We give toxoid early in life, and in diphtheria, the child may have free antitoxin circulating from the mother's serum. With potent antigens, you get a pretty good result despite the fact that there is freely circulating antitoxin. In general, I object to a combination of the two medications.

As far as wound care is concerned, I might cite an informative experience. I was called to care for a patient where a surgeon was involved also. The surgeon had been impressed with this business of not debriding the wound. I do not think you should do too wide a debridement, but there is a reasonable way of taking care of wounds. This surgeon would not touch the wound of this child who had clinical tetanus. The patient eventually came to postmortem and in the wound there was a sliver of wood from which tetanus organisms were cultured. You cannot tell me that is good surgery. You have to use your head about these things, and not lay down dogmatic rules.

Question: Does a wheal and flare reaction to intradermal antitoxin always mean the patient is allergic to the material?

Dr. Perlstein: The fact that you have a positive skin test to serum does not mean that that

patient will get a systemic reaction to antitoxin. It should alert you to its likelihood, however.

Dr. Freeark: We have all seen many patients with wheal formation from intradermal injection, and some of us have seen fatal reactions to antitoxin. I have observed one of these and have heard of others. I am in sympathy with the physician who is reluctant to go ahead with antitoxin. Toxoid rarely causes serious reactions but it is an active immunization and the early and most lethal tetanus will not be prevented in this manner.

Dr. Perlstein: When you start giving an active immunity in many cases there is a negative phase at which time the patient is more susceptible. This would be one reason when you give toxoid to have it covered with antitoxin. May I ask were the fatal reactions you spoke of in the days of cortisone?

Dr. Freeark: The ones I know about occurred so fast that the physician could not get the icebox door open soon enough to get the cortisone.

Dr. Walter Wood: (Associate in Medical Education, Cook County Hospital): Cortisone would have little effect on acute anaphylaxis. Reach instead for epinephrine. Anaphylactic reaction from horse serum should be prevented if you use epinephrine early. Cortisone is primarily effective for serum sickness, which develops later.

Dr. Perlstein: Anaphylaxis is relatively rare, but if you gave horse serum to everybody who had a contaminated wound, the number of deaths would still be less than from tetanus.

Dr. Freeark: Who in the audience has seen death from anaphylactic shock due to antitoxin?

Dr. Frank Folk (Associate Attending Surgeon, Cook County Hospital): I saw one. The needle was no sooner withdrawn than the patient went out. There was just nothing we could do. It is the only one I have seen and I am scared.

Dr. Perlstein: Whenever tetanus antitoxin is given there should always be adrenalin available and perhaps included in the same syringe.

Dr. Freeark: Fatal anaphylactic reactions have occurred with skin testing. Apparently these individuals are so sensitive that even minute doses are lethal.

Dr. Udekwu: Are those really anaphylactic deaths?

Dr. Wood: It is a direct antibody reaction within the fluid itself. You get a violent contraction of smooth muscle throughout the lungs, heart, viscera, and generally through the vascular system. If the patient receives adrenalin intravenously it is rare for death to occur. If from the history, the patient is thought to be hypersensitive in spite of a negative or equivocal skin test, we would give a test dose, using up to 1,000 units of antitoxin parenterally. Both the immediate anaphylactic reaction and delayed serum sickness are dose dependent to a certain extent.

Dr. Freeark: In a patient who is allergic, it is my understanding that horse serum sensitivity not only is dangerous but it inactivates the antitoxin.

Dr. Wood: Partially.

Dr. Freeark: Does not the antigen-antibody union that brings about the reaction vitiate the protective effect against the tetanus toxin?

Dr Wood: Antitoxin has several antibody components and you negate some of them but not the protecting factor.

Dr. Freeark: There are several other ways of passively immunizing the patient who is sensitive to horse serum. The use of antitoxin prepared from cow serum is one. If this is not available a blood transfusion from a donor who has recently been actively immunized with toxoid frequently will provide protective levels.

Case 2: *Dr. Michael Stein*: This 29 year old man reported to the admitting room of Cook County Hospital on March 11, 1959, with complaints of dysphagia of 12 hours' duration and inability to open his mouth for the past three hours. He had a history of heroin addiction and chronic alcoholism covering the past 10 years. He was said to have spent one month at Lexington, Kentucky, 18 months previously in an attempt at withdrawal but signed his own release. On February 1, 1959, he was on a medical ward in this hospital with anasarca of undetermined origin, and was said to have chemical evidence of active cirrhosis with possible beriberi heart disease.

When seen by a member of the Tetanus Team this man was thought to have "galloping" tetanus because he was having long spasms and was convulsing within the first 24 hours of the onset of symptoms. Tracheotomy was done and he was placed on penicillin, sedatives, Methadon®, and artificial hibernation, using the water cooled blanket and mattress. On March 11, his respirations became erratic and he was placed on the

Mörch respirator and curare. His temperature was brought down to between 84 and 88° F. By March 12, he was in a good iatrogenic alkalosis, needing only minute doses of medication to control spasms which persisted to only a mild degree. On March 14, spasms increased in frequency and soon gave way to convulsions, requiring increased medication for control. His temperature rose, despite the hibernation routine, and his blood pressure dropped to 70/30 mm. Hg. The patient expired on March 16, 1959, five days after the onset of symptoms.

This man was an addict. In the last four years our motality rate in heroin addicts with tetanus has been 73 per cent, whereas in nonaddicts it has been 38 per cent.

Dr. Freeark: Is tracheotomy routine in all cases of tetanus, and what is standard therapy?

Dr. Stein: We use discretion about tracheostomy. Those patients who are convulsing and having spasm are tracheotomized. It also is routine in heroin addicts because of the poor prognosis. We defer it in nonaddicts, especially children who are not convulsing or are having infrequent convulsions and do not appear to have laryngeal spasm. If they suggest the need for tracheotomy, it is done promptly and without prolonged debate.

As to standard therapy in tetanus, we use tetanus antitoxin—40,000 units intramuscularly and 40,000 units intravenously, after a skin test of 1:1,000 dilution of tetanus antitoxin. In addition, if the patient has an accessible wound this is incised or debrided and the patient is put on antibiotics. Some anticonvulsive therapy is started, such as injectable Miltown® (meprobamate) 400 mg. every three or four hours. In some addicts who were not controlled by this management we have had to inject Thorazine® 25 to 50 mg. every three to four hours and barbiturates where necessary.

As to fluids and feedings, we carry them at first on intravenous fluids. If the seizures are not too severe and if the patient is not in distress, we put down a nasogastric tube and use high protein feedings plus orange juice and glucose and water in the neighborhood of 3,500 cc. a day. With the use of meprobamate it is not necessary to use the old type dark room but we strive for some reduction in daylight. The patient is given an enema on entry because fecal impaction can precipitate seizures. We avoid the use of an indwelling urethral catheter when possible because these patients often have constant spasms. They can tolerate a nasogastric tube but not a catheter. We use penicillin to counteract the possibility of infection, in the dosage of 600,000 units a day. If a complicating infection is present when they come in, we use whatever antibiotic is appropriate.

Dr. Freeark: Heroin addicts comprise an unfortunate majority of our cases. Presumably the use of contaminated hypodermic needles and failure to cleanse the skin adequately are responsible for the inoculation with tetanus organisms. It often is difficult to locate a single wound or injection site that is responsible for the production of tetanus. In some instances there are multiple abscesses throughout the entire body surface. The difficulties in managing these cases and their almost uniformly poor prognosis should emphasize the importance of active immunization of these patients for tetanus whenever they come under medical surveillance.

Question: I am concerned about the number of cases in which oral sepsis has been implicated in the development of tetanus. Many intraoral lacerations are extensive, and a large number of maxillary and mandibular fractures are compounded into the mouth. Would you advise antitoxin routinely?

Dr. Stein: The cases we presumed got their tetanus orally had had extensive extractions with severe ulcerative lesions in the sockets when they came into the hospital.

Dr. Perlstein: We have only had four cases and your guess is as good as ours.

Doctor: Out of some 200 mandible fractures that are seen at County each year, I would say less than 5 per cent are given antitoxin. I think the reason for that is that we do not like to give it unless we feel the need is definite.

Dr. Freeark: Those mandibular fractures frequently occur in young men who have been in the armed forces and have had their full tetanus immunizations. There might have been more than four cases in an older population.

Dr. Stein: Along those lines, I would like to mention a few interesting statistics from our series. In the nonaddicts, reflecting the worldwide trend, we have more male patients. But in heroin addicts we have between three and four times as many females with tetanus as we do males. Our sex figures do not follow the population trend at all in heroin addiction which is

much higher in males, and we can only surmise that the male has been in service and has had immunizations.

Dr. Freeark: Would you say a few words about what is new in the development of therapy?

Dr. Perlstein: In breaking down our material in terms of results with different treatment programs, we found that after tetanus has developed, it does not matter how you treat the patient because the mortality rate is the same. It is determined by the rapidity of onset and the interval between the first symptom and the first seizure. The use of meprobamate makes the patient more comfortable; it affects morbidity but not mortality. We do not know why tetanus patients die and until we do, treatment must remain largely symptomatic.

Hypothermia was used to cut down metabolism in these patients in hopes of keeping them alive long enough to effect some type of cure. We have had only one case properly controlled and Dr. Mörch did that. Our experience otherwise has been that of a novice with hypothermia but we are convinced that our patients, instead of dying within 24 hours, live longer. This last patient we thought would die within 48 hours but he lived five days. Why he died, I do not know. I think until we know more about the physiology of tetanus we will not know too much about treatment.

It is known that heroin addicts are more likely to have tetanus than the morphine addict. The reason is that the heroin addict has been getting stuff that is adulterated often with house dust that is obtained from vacuum cleaner bags, an obvious source of Clostridium tetani. Also, morphine itself has some degreee of antiseptic activity. Another thing that is known is that in any addiction, the irritability of the synapse is increased. We seem to see more bulbar symptoms in heroin addiction than in nonaddicts. We find dysphagia more common in nonaddicts but I think it is because the addict does not complain about things.

Dr. Freeark: What does the anesthesiology department have to offer these patients?

Dr. E. Trier Mörch (Director of Anesthesiology, Cook County Hospital): I am sure these patients die either because of toxins in the central nervous system at the respiratory centers or because of electrolyte imbalance. If the manifestations are in the respiratory system, such as spasm which closes the vocal cords, treatment is tracheotomy. The secondary respiratory problems are much harder to treat because there is fluid in the bronchi and excessive mucous secretion, with resultant atelectasis and pneumonia. That is difficult to treat and prevent, but there again tracheotomy—a big one—is of help. Do not close the tracheotomy wound; leave it snapping wide open. If you close it, you cannot get the next tube in. In addition, these cases require 24 hours of first class nursing care by the best nurses we have. The secretions should be sent to bacteriology to be studied for sensitivity so that the right antibiotics can be given. It is amazing to see the bacterial flora change in a few days. Humidity in tracheotomy also is important. We pass the normal air through the nose and throat and thereby moisten it before it reaches the trachea, but a surgical short-cut bypasses these membranes and exposes the trachea to drying and increased susceptibility to infection.

What fluids do you give? That depends upon the blood chemistry of the patient, which should be taken twice a day, and the urine should be kept flowing at about 50 cc./hr.

Dr. Freeark: Is respiratory arrest the indication for use of a mechanical respirator, or should it be used prophylactically?

Dr. Mörch: If a patient is doing well, leave him alone. If he is not doing well, do a tracheotomy first; that might be enough. If you are not satisfied, then bring in the respirator. Convulsions most often prevent a good result. Then you have to use narcotics enough to sedate them and paralyze the muscles with curare so we can breathe for them. Curare must be used carefully.

Dr. Freeark: What about hypothermia?

Dr. Mörch: It reduces the patient's metabolism and that of the bacteria. I am more interested in preventing hyperthermia, and that is simple to do.

Dr. Perlstein: At present we are using large tracheotomy tubes and change them every day. I want to emphasize that when you aspirate you must use a clean suction catheter. Just a little thing like that will help a great deal.

Dr. Freeark: Judging from the discussion, tetanus is truly a disease that demands teamwork. It is a tribute to the Tetanus Team that internists, pediatricians, neurologists, anesthesiologists, and surgeons can work so effectively and harmoniously in handling this difficult disease.

EDITORIALS

Repository treatment in allergy

Ever since desensitization of allergic individuals was begun, methods have been sought to decrease the frequency of visits to the physician's office. The generally used aqueous extracts require visits twice a week to every three weeks throughout the year, thus making the procedure expensive in both time and money to the patient.

Various oil bases prepared by Dr. Mary Loveless received some acceptance, but those developed and used by Dr. Ethan Allen Brown seem on the verge of establishing a new era for the allergic patient. While Dr. Brown has given over 3,700 repository ragweed injections, he also has had extensive experience with repository grass, tree, and dust injections. He claims results equal to or better than those achieved by conventional methods and reports few reactions, none of them serious.

The principle of emulsion (repository) therapy is that a large amount of antigen may be given in a short time (often in a single dose). Because absorption is so slow, reactions become unlikely; there should never be enough antigen in the blood stream at any time to cause much trouble. This slow, constant absorption probably leads to excellent immune responses. The obvious danger is that if the antigen is not emulsified, the large quantity injected might well cause serious allergic reactions.

Two or three months before the pollinating season, the patient comes to the physician's office where skin and ophthalmic tests are performed to determine the dosage to be injected. The antigen is mixed with an oil base, epinephrine, and buffered saline. It is then further emulsified by pushing the material back and forth for 15 minutes between two 10 cc. syringes interconnected with a double hubbed needle. At the moment of emulsification, the material suddenly flows like molasses instead of maple syrup. After thorough mixing, it is examined under the microscope to determine whether it is truly emulsified.

The precautions surrounding the actual injections will be subjected to change as we gain more experience. Alcohol must be avoided, as it ruins the emulsion. We now give a small amount of epinephrine both before and after the antigen. The material is divided into up to five separate injections given at 15 minute intervals, all at the same site on the arm, the number of injections varying with the sensitivity of the patient. Before the patient leaves the office, he is given an antihistamine. Usually a steroid is administered for two or three days to try to prevent reactions. But the efficacy of these drugs along this line awaits further evaluation.

We are using repository treatment especially in patients who are first seen too close to the pollinating season to help much with conven-

tional methods, and for those who have failed to respond to aqueous extracts. In this latter group fall many who are so exquisitely sensitive that we are never able to give them sufficient amounts of antigen; these patients may well tolerate comparatively huge doses in an emulsion.

Repository injections may well be the answer for patients sensitive to only one or two allergens such as ragweed and grass. In unskilled hands, the treatment may lead to disastrous results; the same may be said of improperly prepared emulsions. Should the effectiveness of the technique really equal that of the aqueous materials, a giant step will have been taken to aid the allergic patient. Before many more seasons have passed this new method will have achieved its rightful place either in the allergist's office or in the ever mounting heap of discarded techniques; at present we are rather optimistic.

Donald L. Unger, M.D.
Leon Unger, M.D.

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Modern plastic surgery

No surgical field ties in with other specialties as much as that of plastic, or reconstructive surgery. The term reconstructive surgery actually is more descriptive since no plastics or synthetic products are utilized. Only the transplantation of normal autogenous tissues can insure successful results.

Modern plastic surgery deals with replacement of all skin and subcutaneous tissues on all parts of the body. In other words, it includes closure of all cutaneous losses either by some type of primary suture of the wound edges or, when this is not feasible because of the magnitude of the surface area, covering it with a properly selected type of skin graft or flap that will satisfy the needs of the area involved.

Plastic surgeons make no claim that they can suture a laceration better than other surgeons, but they do spend more time and patience on these jobs so that a better cosmetic result may be anticipated. The specialty deals with the reconstruction of all types of facial deformities, including facial bone and jaw fractures. Facial paralysis may be improved by transplantation of fascia lata. The reconstruction of noses, orbits, eyelids, and ears is included in the plastic surgeons' work. Congenital deformities such as harelip and cleft palate defects must be added. Surface deformities, whether they be birthmarks, loss of covering following burns, avulsions, or surgical excision for the treatment of cutaneous malignancy, naturally are included because skin replacement procedures frequently are indicated.

The general management of the acutely burned patient is a common problem. Not only is the early replacement of skin loss mandatory, but later correction of neglected burn scar contractures must likewise be done. The burned hand frequently presents major problems, not only with surface restoration, but with tendon replacement or transplantation as well.

In view of the wide scope involved, it is obvious that the American Board of Plastic Surgery requires a minimum of three years' training in general surgery prior to the advanced residency in plastic surgery. By so doing, the reconstructive surgeon becomes familiar with all types of anatomical problems. The basic principles of reconstruction are essentially the same, whether they involve the face or the extremities.

Since this specialty covers such a broad area, the plastic surgeon has come to function largely by co-operating with physicians working in other fields. For example, he may aid the dermatologist by the surgical excision and reconstruction of extensive skin tumors, both benign and malignant. He may help the radiologist by repairing any irradiation injuries of the skin and subcutaneous tissues that may arise incidental to adequate therapy of deep seated malignancies. He may assist the general surgeon by the reconstruction of defects produced by the surgical extirpation necessary for the cure of cancer. He may aid the ophthalmologist by reconstruction of eyelid defects or socket irregularities so that a prosthesis may be worn. He may even help the psychiatrist by eliminating certain physical deformities that are producing psychic trauma. He may aid the pediatrician by the closure of cleft lips, palates, and a myriad of other congenital anatomical abnormalities. Because of associated surface defects of the extremities, the plastic surgeon frequently aids the orthopedic surgeon and neurosurgeon by replacing cutaneous loss with a properly chosen skin graft or flap; later, underlying bone, tendon, or peripheral nerve surgery may be carried to a successful conclusion.

There are few routine or stationary problems in the field of plastic surgery. New conditions

arise constantly but the fundamental principles of repair remain the same. The individual methods of reconstruction are determined largely by the surgeon's personal imagination and individual ability.

Paul W. Greeley, M.D.

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Together we stand

The health team must stand together if it expects to survive. There is a growing tendency for organized medicine to blame the high cost of medical care on hospitals and pharmaceuticals in an effort to play down the physician and his fees. This is done in an attempt to lighten the gathering storm of public protest against the medical profession.

Blaming others is a shortsighted policy because division of opinion and internal friction is bound to encourage the government to step in. There is nothing our opponents would like better than to separate our ranks and tackle each group on the medical team individually. In the end, there will be less and less freedom in choosing physicians, drugs, and hospitals. No one member of the health team can stand alone.

Co-operation means giving and taking. The cost of medical care increased 4.5 per cent between May 1958 and May 1959, according to the Bureau of Labor Statistics. This is the largest increase for any elements in the commercial price index with the exception of transportation.

There is nothing to be gained by denying these facts or shifting the blame on to the pharmaceutical industry or the hospitals. After all, the treatment of a patient begins and ends with the physician. He prescribes the remedies, determines the length of the hospital stay, and the amount of laboratory workup.

Rising costs usually make industries tighten their belts or try for greater efficiency. We should concentrate on lower costs within our present framework without sacrificing the quality of medical care.

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The superior man will watch over himself when he is alone. He examines his heart that there may be nothing wrong there, and that he may have no cause of dissatisfaction with himself. — *Confucius*

Sports Medicine Congress

A Sports Medicine Congress will be held in conjunction with the Pan American Games in Chicago, September 1-2. The meetings will be conducted at Thorne Hall, Northwestern University, Chicago campus. Participants will include many authorities on athletic training, conditioning, and injuries.

Competitive athletics is here to stay and there is need for scientific research and guidance, considering the popularity of sports. There are few fields in which so many misconceptions exist, especially on diet, training, injuries, and on the effects of strenuous exercise of the heart, circulation, and longevity.

The speakers include the celebrated Paul Dudley White, dean of American cardiologists; and Warren Guild and James R. Wilson, authorities on diet. Injuries to the lower extremities will be discussed by William Paul, chairman of the department of physical medicine at the University of Iowa and physician to last year's Big Ten football champions, teamed with Edward Compere, chairman, department of orthopedic surgery, Northwestern University.

Other speakers are Irwin Schulz, physician to the Milwaukee Braves; John O'Connor, associate, bone and joint surgery, Stritch School of Medicine; and Stephen Reid, associate professor of surgery, Northwestern University and team physician to the Northwestern Wildcats.

The American College of Sports Medicine will be represented by Allen J. Ryan who will speak on the prevention and treatment of athletic injuries. L. F. Bishop and J. B. Wolffe will conduct a round table discussion on the effects of physical training on the cardiovascular system. Other discussion groups will be led by nationally known trainers, coaches, physiologists, and physical educationists. Topics include new trends in conditioning, especially interval training, which is said to be responsible for new records in distance running.

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Illinois gains two delegates to AMA in section elections

Illinois picked up two delegates to the AMA House of Delegates in recent elections by scientific sections of the AMA. Dr. Edward L. Compere, Chicago, will represent the Section on Orthopedic Surgery, and Dr. Harry F. Dowling,

Chicago, will represent the Section on Experimental Medicine and Therapeutics. Their two-year terms will begin January 1, 1960.

Other Illinois physicians elected to section positions are:

Dermatology — Dr. Stanley E. Huff, Evanston, representative to scientific exhibit.

Diseases of the Chest — Dr. Edward R. Levine, Chicago, representative to scientific exhibit.

Gastroenterology and Proctology — Dr. Joseph B. Kirsner, Chicago, chairman.

Internal Medicine — Dr. Wright R. Adams, Chicago, secretary; Dr. Henry T. Ricketts, Chicago, representative to scientific exhibit.

Laryngology, Otology, and Rhinology — Dr. Paul H. Holinger, Chicago, chairman.

Nervous and Mental Diseases — Dr. Benjamin Boshes, Chicago, representative to scientific exhibit.

Obstetrics and Gynecology — Dr. H. Close Hesseltine, Chicago, vice chairman; Dr. Frederick H. Falls, River Forest, representative to scientific exhibit.

Ophthalmology — Dr. Frank W. Newell, Chicago, representative to scientific exhibit.

Pathology and Physiology — Dr. Lester R. Dragstedt, Chicago, vice chairman; Dr. Samuel A. Levinson, Chicago, representative to scientific exhibit.

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Medicine on postage stamps

Among recent issues of postage stamps dealing with the medical profession were the following:

Argentina: A 1.00 plus 0.50 stamp provided funds for the fight on leukemia; it shows the profile of a child receiving life-saving blood in her finger.

Germany (West) — A 20pfg stamp honors the 500th anniversary of Cardinal Nicholas Cusanas, founder of St. Nicholas Hospital.

Monaco — A 100f value was issued to mark the inauguration of the hospital bloc, "Polyclinque Princesse Grace."

Philippines — Dr. Jose Rizal, physician and national hero, is the subject of the 10th stamp in the Famous Filipinos series.

Spanish Guinea — Digitalis and the castor oil plant are pictured on two charity stamps.

Yugoslavia — A set of nine stamps shows different medicinal plants.

This year marks the 100th anniversary of the Battle of Solferino, Italy, the horror of which led to the founding of the Red Cross movement by Jean Henri Dunant, Swiss humanitarian. The event has been commemorated postally by many countries recently, including the following:

Belgium — Three high values in a six-stamp set bear the portrait of Dunant with a pair of stretcher bearers carrying a wounded soldier; three low values have a Red Cross and drop of blood falling on a heart, symbolic of the blood bank program.

Denmark — Two values mark the centenary of the Battle of Solferino.

Ethiopia — Three 1955 Red Cross stamps were overprinted to mark the centenary.

Iran — Two commemoratives show the flags of the Red Cross and its Moslem equivalent, the Red Crescent.

Italy — Five stamps commemorate the Risorgimento battles of 1859, two being surtaxed for the benefit of the Red Cross.

Japan — A 10 yen Red Cross stamp pictures nurses carrying a wounded soldier on a stretcher.

New Zealand — A Red Cross flag against a background of two hemispheres is the motif of a surtaxed Red Cross commemorative.

Sweden — A surtaxed semi-postal bears the portrait of Dunant.

Yugoslavia — Two surtaxed Red Cross stamps symbolize the assistance given to families.

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Editorials from other journals

The low cost of murder

Some time ago a national television network presented a program in which a noted attorney made an impassioned plea for the abolition of capital punishment because he did not believe it deterred people from committing murder. We believe that those who murder in the heat of passion never consider the possibility of punishment by death for their action; their crimes are impulsive and without thought. Likewise, this highest penalty will not end murder for revenge or profit; killers of this type believe they have planned so skillfully and are so well protected they will not be discovered and will escape all punishment.

A few days after this emotional television performance I was astonished to hear a radio commentator give his opinion that the appearance of the distinguished jurist, and the arguments

he advanced, would soon lead to abolition of the death penalty on a nationwide basis. I cannot believe the American public is so emotionally immature it will so readily be swayed as predicted.

In presenting his highly emotional plea, the lawyer based his arguments primarily on the fact that murderers who received the death sentence did not cower and cringe in fear as execution approached and hence the sentence did not serve as a deterrent. His argument was given great dramatic impact by the showing of a condemned man, confidently expecting a stay of execution, to the very moment when the lethal current passed through his body. The jurist argued that since the condemned murderer continued to believe that he would be pardoned until the very last minute, fear of execution does not act as a deterrent.

The fact that the condemned criminal did not writhe in fear and trembling as the days before his execution went by indicates nothing more than the action of the protective mechanism built into man by a merciful God, a God with whom the killer usually has made his peace in the final days of his life. This same merciful device which protects the killer awaiting death is observed daily by physicians who minister to those who suffer from chronic, fatal diseases. It is not unusual for a patient dying of pulmonary tuberculosis, cancer, or other disorder to sincerely continue to make plans for months ahead, with what at times are often the last few breaths of life. This shield of mercy seems to be granted those whose days are numbered. From the stark reality of impending death they turn to a pathologically protective hope.

The eminent advocate began his presentation with a scene in a prison, at a time when all avenues of hope appeared to have been closed to the convicted man. The jurist made much of the fact that the condemned prisoner continued to hope, to dispatch letters to the governor, and to berate his attorney who, understandably, radiated some degree of gloom. The narrator might have presented a courtroom scene revealing the anguish of the prisoner and his family when the death sentence was pronounced. Because so many escape the death penalty, it is natural for a prisoner sentenced to death builds up hope that he, too, will "beat the rap."

Whenever "life in prison," the alternative to "death," is pronounced, the murderer and his family have reason to be jubilant for they have scored a victory. We appreciate that there is good cause for cheering when one is sentenced to "life in prison" rather than "death," because life imprisonment has become a farce in our penal system. Often a criminal serves longer sentences for house-breaking and robbery than he does when sentenced to "life in prison."

If—more often—the penalty "death in the electric chair" meant just that, and the sentence of "life imprisonment" was not just a phrase, these penalties might then have a more definite deterrent effect upon our rising murder rate. *Samuel E. Hadden, M.D. The Low Cost of Murder. Philadelphia Med. June* 19, 1959.

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Summary of ISMS Legislative Program

The curtain dropped June 30, 1959, on the 71st General Assembly and what must go down in history as one of its most productive sessions, from the standpoint of Illinois Medicine. Your Society not only saw enacted its entire legislative program into law but was able to oppose successfully all legislation that might be considered inimical.

Medical Research

Your society offered HB6 and HB156 which would permit a person to give his body or any part thereof to medical research, a tissue bank, or teaching institution either by will, or other written instrument, attested to by two witnesses. The bills provide that in the event the body is taken or a tissue transplant is made that the executor of the estate or institution receiving the same shall not be liable in suits brought by next of kin for mutilation of the body. These bills were both passed and signed by the Governor. The bills were reviewed by the appropriate committee of the Chicago Bar Association. The Illinois State Bar Association took no position.

Doctor-Patient Privileged Communication Established

Your society arranged for the introduction of HB1280 which sets up a prohibition on the testimony of physicians in court cases unless the patient waives the privilege either expressly or impliedly by some affirmative action. The exceptions to the privilege are: 1) murder, 2) malpractice suits against the physician, 3) abortion, 4) mental illness hearings, 5) suits brought by or against the patient, 6) express waiver, and 7) will contests. As originally submitted the implied waiver covered under 5 above was limited to waiver only when suit was brought by the patient. The implied waiver provided also that the medical testimony has to be relevant to the physical or mental condition of the patient in dispute. However, this section was amended in the Senate and the relevancy test was stricken and the privilege will not apply where suits are brought by or against the patient. As limited as this privilege may be, as finally passed by the legislature, it is believed that it will protect disclosures made to a psychiatrist, and it protects disclosures made to a physician in the nature of a confession of a crime other than murder or abortion.

"Psychiatrist" Defined

We endorsed HB1231 and HB1232 which will provide a needed definition of a "psychiatrist" under one section of the criminal statutes and fix a method of payment of the pyschiatrist's fee under 2 sections of the criminal statutes for services rendered in aid of the court for examining defendants charged with sex crimes.

Toxicological Laboratory

SB159, proposed by ISMS, will establish needed toxicological laboratory services in the State Department of Health to assist coroners and law enforcement officials in determining the cause of death suspected to have been accomplished by poison. The two laboratories (one in Chicago and one in Springfield) also will conduct examinations of soil, air, and water for radiation hazards and pollution.

Physicians' Lien

SB1001, offered by ISMS, will create a lien in favor of physicians up to one-third of the value of a claim or cause of action due an injured person, provided the physician serves notice and makes his records available for examination.

"Professional Person" Redefined

SB413 proposed by ISMS redefines the term "professional person" under the Visual Limitations Act to limit the persons designated to those persons licensed under the Medical and Optometric Practice Acts.

Licensure Standards Improved

All of the ISMS's suggestions to the Medical Practice Act Commission for the improvement of licensure standards in Illinois were passed. The legislature approved SB665 which changes

the provisions pertaining to the elapsed time of the medical course, to permit medical schools to adopt the quarter system. SB666, which provided a citizenship requirement before full licensure, was killed in the House License and Miscellany Committee but subsequently was adopted when the House and Senate approved the measure by amendment to another bill. SB667 permits physicians to come to Illinois for purposes of residency training to take the medical examination. SB668 limits the number of medical examinations a physician may take to five unless he takes additional training thereafter, as specified by the Medical Examining Committee. SB669 increased the penalties for the illegal practice of medicine, particularly for repeated offenses which carry a mandatory six months jail sentence. SB670 provides for enforcement of the Medical Practice Act by court injunction. SB671 provides that the State Health Department shall require interns in hospitals licensed by the department to be licensed under the Medical Practice Act. SB672 designates an assistant attorney general to the Department of Registration to assist in the enforcement of the Medical, Dental, Nursing, and Optometric Practice Acts. SB673 provides for notice of lapse of a medical license where re-registration has been overlooked. SB968 provides the sum of $25,000 to pay the salary and expenses of the assistant attorney general provided for by SB672.

Miscellaneous

Other measures of interest to medicine adopted include HB329 which simplifies the bookkeeping on state reimbursement payments for TB care and eliminates the need for deficiency appropriations. Also passed was HB626 which declares that IPAC payments made to physician members of the legislature do not constitute a conflict of interest. A number of bills suggested by the Narcotics Commission were adopted, including the proposals of the ISMS to permit the treatment of narcotic addicts in private hospitals and sanitaria; to eliminate provision under section 23 of the Narcotic Acts for revocation of M.D. license for failure to co-operate with state narcotics inspectors. A defect in the Coroner's Law was remedied by the enactment of HB1465 which requires a coroner's permit to cremate. A Dangerous Substances Labeling Act and a new drug act also were passed. A number of legislative commissions were authorized, including a Laboratory Technicians' Study Commission (SB891). It is doubtful, however, that many of these will be created in view of the shortage of funds.

During the session your society played an important if not major role in the defeat of the following legislation: SB46 et al. to reorganize departments of state government, including the transfer of the licensing function to the Department of Finance; HB188 to make the sale of narcotics to minors subject to a mandatory life sentence; HB1118 which would have imposed a 2 per cent tax on premium income of nonprofit hospital and medical plan corporations as well as private insurance corporations underwriting medical, health, and hospital insurance; HB564 which would have labeled auto license plates issued physicians, "M.D."; HB1063, 1064, 664, and 1321 which would have changed the basic structure of the Coroner's Act; HB1017 which would have prohibited the use of silver nitrate in the eyes of newborns; HB525, an antivivisection bill; and amendments to exclude naprapaths from injunctive enforcement of the Medical Practice Act.

WALTER L. OBLINGER
Associate Counsel

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Questions and Answers on Narcotic Act

Q: Can a physician treat an addict?

A: Yes.

Q: How and where?

A: A physician may prescribe for, furnish to, or administer narcotic drugs to his patient when the patient is suffering from a disease, ailment, injury, or infirmity attendant upon old age. A physician shall prescribe, furnish, or administer narcotic drugs only when he believes in good faith the disease, ailment, injury, or infirmity requires such treatment, and only in such quantity and for such length of time as are reasonably necessary; provided, however, that a physician may treat any addict as such who is confined to any city or county jail or penitentiary or any county, state, or federal hospital or any hospital approved by the division for the treatment of such addiction.

Q: What are the formal requirements for narcotic prescriptions?

A: A prescription for narcotic drugs shall be dated as of and signed on the date when issued, and shall bear the full name and address of the patient and the name, address, and registry number of the practitioner. A physician may sign a prescription in the same manner as he would sign a check or legal document; for instance, J. H. Smith, John H. Smith, or John Henry Smith. Prescriptions should be written with ink or indelible pencil. The refilling of a prescription for taxable narcotic drugs is prohibited.

Q: What must a physician do when he changes the location of his office?

A: A physician registrant who changes the location of his office shall, within 30 days, execute a new return on Form 678, marking it "Revised Registry." The return shall set forth the date of change and the new address, and be forwarded with the official tax stamp to the Director of Internal Revenue, who issued the stamp for recording the change.

Q: Is the special tax stamp required to be posted?

A: Yes. Under Federal law, every special tax stamp issued to a taxpayer must be kept posted conspicuously on the premises where the business is operated.

Q: Where should blanks for narcotic drugs be kept?

A: A physician's prescription blanks should be most carefully safeguarded and never left where persons who may be drug addicts will have an opportunity to take them, prepare, and have filled forged narcotic prescriptions. A physician's official order forms should likewise be safeguarded, and great care should be exercised by the physician in keeping his stock of narcotic drugs secure from robbery or pilfering. The medicine case of narcotics should never be left in an unattended automobile, if avoidable.

(Recent legislation makes it a violation of the law for any unauthorized person to possess official prescription blanks.)

Q: Is it permissible for partners to use the same set of official prescription blanks?

A: No. The prescription blanks issued by the division shall be furnished in serially numbered groups of 100 forms, each in triplicate, and shall not be transferable.

Q: Should each partner be individually registered with the Director of Internal Revenue to be lawfully entitled to prescribe, dispense, or administer narcotics?

A: Yes. Any two or more practitioners who are partners or operate a clinic and are registered in Class 4 under the Federal narcotic laws, may dispense and administer narcotic drugs obtained on official written order forms, under such Class 4 classification, to their patients within the confines of the offices of the

partnership or clinic; provided that each practitioner is individually registered with the District Director of Internal Revenue.

Q: What must a physician do in case narcotics or prescription blanks are lost or stolen?

A: Every practitioner should report immediately to the local law enforcement authorities, and to the Division of Narcotic Control, Springfield, Illinois, narcotic drugs or prescription blanks that are lost or stolen. Such report should contain the kind and quantity of narcotic drugs, serial numbers of prescriptions, and the date of the loss or theft. A report of narcotics lost or stolen also should be sent to Mr. George M. Belk, District Supervisor, Federal Bureau of Narcotics, 817 New Post Office Building, Chicago 7. The loss of prescription blanks need not be reported to Mr. Belk, since this is a State matter.

Q: What is the proper procedure in case a physician terminates practice or moves out of Illinois?

A: In the event a practitioner terminates practice or moves out of Illinois, the unused supply of prescription blanks issued to such practitioner should be returned to the Division of Narcotic Control, Springfield.

Q: If a physician, after starting to write a narcotic prescription on the official prescription blank, decides to void the prescription, what should he do with the prescription?

A: He should write the word "void" across the face of the official prescription blank. Such voided prescription blank should be retained in the book.

Q: How long must narcotic records be kept?

A: The official prescription blank books, containing copies of the official prescription blanks issued and the records of narcotic drugs administered, dispensed, or professionally used, should be retained by the practitioner for two years.

Q: In the event a practitioner has a patient who warrants the use of narcotic drugs to allay pain and suffering incident to disease, ailment, injury, or infirmity, is he required to report such facts to the Division of Narcotic Control, Springfield?

A: No. A practitioner may, in his discretion, report such facts in writing. The Division has report forms that will be furnished, free of charge, for use by the practitioner, if desired. This form is not required; it is optional.

The Committee on Narcotics will be happy to answer additional questions concerning the use of narcotics under the new state law. They will be answered in this column in forthcoming issues.

Address your queries to the Editors of the Journal or to Jacob E. Reisch, M.D., chairman, committee of narcotics, Suite 1909, 185 N. Wabash Avenue, Chicago 1.

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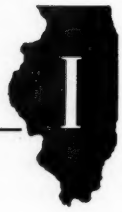
Vitamin K during pregnancy

It is now evident that vitamin K in large doses may produce hyperbilirubinemia, kernicterus, and even death in premature infants. Since placental transmission of vitamin K has been established, its routine administration to mothers in labor to protect the infant from possible hypoprothrombinemia should be revaluated by every obstetrician. Its use certainly should be avoided if labor is premature or delivery imminent. Adequate protection of the infant can be accomplished safely without risk of bilirubinemia, by giving 1 mg. of vitamin K parenterally at birth. *Bruce B. Rolf, M.D. The Work of an Rh Committee. California Med. June 1959.*

CORRESPONDENCE



Chicago Medical Society postgraduate courses

The Chicago Medical Society will hold two postgraduate courses in obstetrics and gynecology, at the Morrison Hotel, October 26-30, and in pediatrics, at the Morrison Hotel, November 2-6.

The course in obstetrics and gynecology will cover modern maternity care, complications of pregnancy and labor, postpartum complications, functional disturbances of the reproductive organs, and cancer of the reproductive organs.

Subjects of the course in pediatrics will include: newborn disorders, infectious and metabolic diseases, hematology, cardiology, neurology, emotional and developmental problems, and pediatric surgery.

The fee for each course is $75. Further information may be had by writing to the Chicago Medical Society, 86 East Randolph Street, Chicago 1.

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American College of Surgeons lists sectional meetings

The American College of Surgeons has announced the following sectional meetings for 1960:

Louisville, January 21-23, Brown Hotel; Dr. Rudolf J. Noer, local chairman.

Boston, February 29-March 3, Statler Hilton (surgeons' headquarters) and Sheraton-Plaza (nurses' headquarters); Dr. Claude E. Welch, local chairman, and Dr. Anne Kibrick, nurses' program chairman. For surgeons and nurses.

Colorado Springs, Col., March 21-23, Broadmoor; Dr. Edward H. Vincent, local chairman.

Portland, Ore., March 28-30, Sheraton-Portland Hotel; Dr. Millard S. Rosenblatt, local chairman.

Minneapolis, April 11-13, Hotel Leamington; Dr. Horace G. Scott, local chairman.

Rochester, Minn., April 14, Kahler Hotel; Drs. Edward Starr Judd Jr. and Joseph H. Pratt, co-chairmen.

Clinical Congress, San Francisco, October 27-November 1.

Address inquiries to Dr. H. O. Saunders, 40 East Erie Street, Chicago 11.

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American Hospital Assoc. to meet in New York

The American Hospital Association will hold its 61st annual meeting in New York, August 24-27, its first in that city since 1911.

The program will include such topics as providing health care for the aged, future of prepayment plans for hospital care, progressive patient care, hospital services, nursing education, and hospital operation.

There also will be meetings of several allied groups, including the American Association of

Hospital Consultants, American Association for Hospital Planning, American College of Hospital Administrators, and American Association of Nurse Anesthetists.

About 500 exhibits will show new equipment and supplies.

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Nursing home group to meet

The American Nursing Home Association will hold its 8th national convention at the Morrison Hotel, Chicago, October 6-9. The speakers will include representatives of government, public health, public service, and public relations. The convention theme will be "Public Relations is What You Do."

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Surgeons of world to speak at I.C.S. annual congress

Leading surgeons from many parts of the free world will present scientific papers at the 24th annual Congress of the North American Federation, International College of Surgeons, to be held at the Palmer House, Chicago, September 13-17.

Among the special features will be military reports on medical operations and research in climatic and environmental extremes, to be presented by six Navy medical officers. Their reports will cover the problems of space flights and prolonged stays in frigid zones, tropical climates, or under water.

Prof. Dr. Andre Thomas of the Faculty of Sciences, the Sorbonne, Paris, inventor of an artificial pulmonary membrane, will give a demonstration of progress in artificial cardiopulmonary circulation and the physiological and surgical results obtained from the use of his instrument.

The annual Acuff Memorial Lecture will be presented by Dr. Sten Friberg, professor of surgery, University of Stockholm, Sweden. Among other speakers will be Senator Joseph Lister Hill (D. Ala.) and Senator Hubert H. Humphrey (D. Minn.).

The North American Federation comprises the United States, Canada, Mexico, Cuba, Haiti, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, and Panama.

Further information may be had by writing to the Secretariat, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10.

Dr. John I. Brewer, Chicago, to address ACOG meeting

Dr. John I. Brewer of Chicago, president of the American College of Obstetricians and Gynecologists, will be the guest banquet speaker at a District II meeting of ACOG, to be held in the Waldorf Astoria Hotel, New York, September 24-26.

The scientific program will include general clinical sessions and breakfast and luncheon conferences.

The College also announced that District VI (Illinois, Iowa, Minnesota, Nebraska, North Dakota, South Dakota, Wisconsin, Manitoba, and Saskatchewan) will hold a meeting at the Sheraton-Fontenelle Hotel, Omaha, October 15-17.

Other district meetings will be held as follows: Equinox House, Manchester, Vt., September 3-5; Chase Hotel, St. Louis, September 18-19; Hotel Hershey, Hershey, Pa., October 9-10; Americana Hotel, Bal Harbour, Fla., October 29-31; Royal Hawaiian Hotel, Honolulu, November 15-21; Statler Hotel, Detroit, November 19-21.

Further information may be had by writing to Mr. Donald F. Richardson, executive secretary, ACOG, P. O. Box 749, Chicago 90.

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Physicians-schools meeting

The seventh annual National Conference on Physicians and Schools, under the sponsorship of the AMA, will be held at the Moraine-on-the-Lake Hotel, Highland Park, Ill., October 13-15.

Further information may be had from the Department of Health Education, AMA, 535 North Dearborn Street, Chicago 10.

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Interstate Postgraduate Medical Assoc. to meet

The Interstate Postgraduate Medical Association of North America will hold its 44th scientific assembly at the Palmer House, Chicago, November 2-5.

Besides lecture programs, to be presented by prominent physicians from all parts of the country, there will be breakfast conferences, teaching programs, and scientific exhibits.

For further information, write to Mr. Roy T. Ragatz, executive director of the association, Box 1109, Madison 1, Wisconsin.

A.C.S. to hold clinical congress in Atlantic City

The American College of Surgeons will hold its 45th annual Clinical Conference in Atlantic City, September 28-October 2. An attendance of more than 10,000 fellows and guests is expected.

Included in the program will be nine postgraduate courses, panel discussions, symposia, research reports, motion pictures, color closed-circuit telecasts from Bellevue Hospital in New York, cine clinics, and scientific and industrial exhibits.

Dr. Newell W. Philpott of Montreal, president of the college, will preside at the opening evening session, at which Dr. Dean Rusk, president of the Rockefeller Foundation, will speak. The annual convocation will take place on the final evening.

Medical students from 36 medical colleges will be guests as an educational contribution of the College. They will attend a number of special sessions in addition to the regularly scheduled lectures, discussions, and demonstrations.

The students from the five Chicago medical schools, selected by vote of their classmates, are: Earl F. Bracker, Northwestern; Alan A. Neuman, Chicago Medical; Robert Porter, University of Chicago; Richard C. Stalzer, Loyola; Glen E. Tomlinson, University of Illinois.

For further information, write to Dr. Paul R. Hawley, director, American College of Surgeons, 40 East Erie Street, Chicago 11.

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Twenty-three clinics for crippled children listed for September

Twenty-three clinics for Illinois' physically handicapped children have been scheduled for September by the University of Illinois, Division of Services for Crippled Children. The Division will count 18 general clinics providing diagnostic orthopedic, pediatric, speech, and hearing examination along with medical, social, and nursing service. There will be two special clinics for children with cardiac conditions, one for rheumatic fever, and two for cerebral palsy. Clinicians are selected from private physicians who are certified Board members. Any private physician may refer to or bring to a convenient clinic any child or children for whom he may want examination or consultative services.

September 2 — Carmi, Carmi Township Hospital
September 2 — Champaign, McKinley Hospital
September 2 — Hinsdale, Hinsdale Sanitarium
September 2 — Rock Island (Cerebral Palsy), Foss Home, 3808 8th Avenue
September 3 — Sterling, Community General Hospital
September 8 — East St. Louis, St. Mary's Hospital
September 8 — Peoria, Children's Hospital
September 9 — Joliet, Silver Cross Hospital
September 10 — Anna, County Hospital District
September 10 — Springfield, St. John's Hospital
September 11 — Chicago Heights (Cardiac), St. James Hospital
September 15 — Alton, Alton Memorial Hospital
September 16 — Evergreen Park, Little Company of Mary Hospital
September 16 — Jacksonville, Our Saviour's Hospital
September 17 — Elmhurst (Cardiac), Memorial Hospital of DuPage County
September 17 — Rockford, Rockford Memorial Hospital
September 22 — Peoria, Children's Hospital
September 23 — Aurora, Copley Memorial Hospital
September 23 — Springfield (Cerebral Palsy), Memorial Hospital
September 24 — Decatur, Decatur-Macon County Hospital
September 24 — Sparta, Sparta Community Hospital
September 29 — Effingham (Rheumatic Fever), St. Anthony Hospital
September 30 — Centralia, New St. Mary's Hospital

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Conference on trichinosis

An International Conference on Trichinosis will be held in Warsaw, September 12-13, under the auspices of the Polish Parasitological Society. The occasion is the 100th anniversary of Zenker's discovery. Papers will be presented in English as well as in other languages.

Provide postgraduate course in general surgery

Another intensive two-week postgraduate course in general surgery will be provided by the United States Section, International College of Surgeons, in co-operation with the Cook County Graduate School of Medicine, Chicago, beginning November 2.

The courses will be presented at the graduate school and in the wards and operating rooms of the Cook County Hospital. The program will be under the supervision of the hospital's surgical staff and will include illustrated lectures, motion pictures, anatomy demonstrations, operative clinics, and practice surgery by the participants on anesthetized dogs.

Consideration will be given to surgical technique, surgical complications, and management of the surgical patient, as well as to an intensive review of the basic sciences in relation to clinical surgery. The course will comprise 78 hours of instruction, including 20 hours of surgical anatomy on the cadaver. Tuition is $150. Participants will be eligible for formal (category I) credit from the American Academy of General Practice.

Applications should be addressed to Mr. John W. Neal, registrar, Cook County Graduate School of Medicine, 707 South Wood Street, Chicago 12, or to Dr. Ross T. McIntire, executive director, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10.

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Papers on goiter sought

Papers with a 15 minute limit, to be presented at the fourth International Goiter Conference in London, July 5-9, 1960, are being asked for by the American Goiter Association. An abstract of not more than 400 words should be sent by December 1 to Dr. J. E. Rall, National Institute of Arthritis and Metabolic Diseases, National Institutes of Health, Bethesda 14, Md.

Dr. Warren H. Cole of Chicago is president of the American Goiter Association, which has headquarters at 149½ Washington Avenue, Albany 10, N. Y.

Conference on zoonoses to be held in Iowa City

The second annual Midwestern Interprofessional Conference on Diseases of Animals Transmissible to Man will be held at Iowa City, September 10-11, under the sponsorship of the State University of Iowa College of Medicine and the Iowa State Department of Health.

The conference will cover brucellosis, rabies, leptospirosis, Q fever, staphylococcal diseases, and other subjects. Presentations by physicians and veterinarians will emphasize the public health aspects and recent advances in this field.

For further information, write Dr. Ian Maclean Smith, University Hospitals, Iowa City.

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World medical education conference to be held

Pooling of international effort in behalf of improved health the world over will highlight the second World Conference on Medical Education in Chicago, August 29-September 4.

Medical educators from 50 countries will participate in the meeting, sponsored by the World Medical Association, World Health Organization, Council for International Organizations of Medical Sciences, and International Association of Universities. President Eisenhower is patron of the conference.

There will be 125 speakers. Although Russia is not a member of the WMA, that country is expected to send a delegation and to provide at least two speakers. Poland, another nonmember, also will be represented.

Further information may be had from the WMA, 10 Columbus Circle, New York 19.

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Offer electrocardiology course

The University of Nebraska College of Medicine is offering a three-day postgraduate course in advanced electrocardiology in Omaha, September 28-30. Write to the University, 42nd and Downey Streets, Omaha 5, for information.

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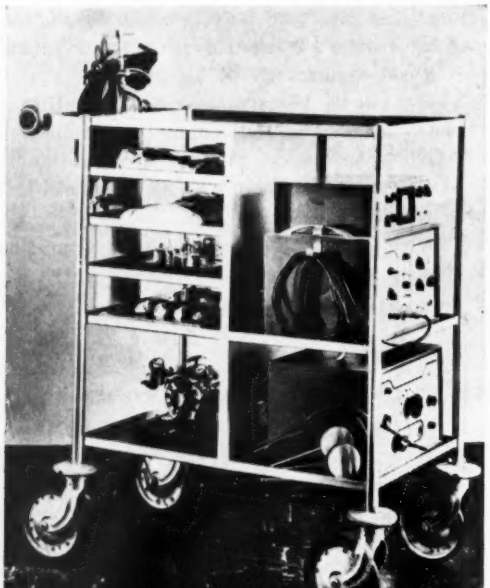
AT THE EDITOR'S DESK

Heart monitor and crash cart

A new heart monitor weighing only six ounces and measuring less than five inches was introduced by the National Cylinder Gas Division of Chemetron Corporation at the AMA meeting in Atlantic City. Developed by Dr. William F. Veling, for use during surgery, the monitor is strapped to the patient's forearm and emits beeping signals, translating the electric wave activity of the heart. The aim is to reduce surgical risks by signaling the physician instantly when the pulse indicates need for heart massage or other resuscitation measures.



Crash cart.

A fully equipped cardiac crash cart for emergency treatment of cardiac arrest is now in use in a New York hospital. It was designed and built by Colson Corporation and contains all the modern devices used for emergency cardiac care. One item is an internal-external pacemaker monitor to provide stimuli for initiating spontaneous activity when the heart stops beating. It also contains a defibrillator, a suction pump for aspiration of mucus and vomitus, and various size syringes for drug administration. Other supplies may include a thoracotomy set for exposing the heart to permit massage, electric stimulation, or drug therapy; oxygen; and an endotracheal tray containing equipment for a tracheotomy.

Modern housing for aged

Toledo's residents can't wait to grow old. A unique six story penthouse apartment building for young oldsters is being constructed in a new retirement city. The Crestview Club apartment, sponsored by Flower Hospital, is designed to meet the needs of the oldster who wants to maintain his independence and yet be free of maintenance chores. In addition, around the clock nursing service is available, as well as health care during illness. They use catchy advertisements like "distinguished-daylighted apartments with built-in health security." Studio apartment prices begin at $9,250. The rental is $150 a month

which includes meals, utilities, and maid and health services.

Hearing aid

The new Michigan Avenue display salon of Zenith Radio Corporation operates a service center for testing all types of hearing equipment. They also have a sales center for their own hearing devices.

Virgin Islands — pollen free

A haven for hay fever sufferers is St. John, Virgin Islands, which is completely free of ragweed. On the basis of a pollen survey by the aerobiologist, Oren C. Durham, the island has been given a zero rating in the National Hay Fever Index. Comparable figures in other areas are: New York 25, Chicago 65, Washington, D. C. 41, and San Francisco, 0.2.

Pharmaceuticals

Alphosyl is a new tar-allantoin combination for the treatment of psoriasis. It was used by a group of Cincinnati physicians on 62 cases; 29 were completely cleared and another 26 almost completely cleared. In the remaining seven, more than half the psoriatic skin areas healed.

Lederle Laboratories announced recently that Kynex sulfamethoxy-pyridazine shows promise as a prophylaxis in rheumatic fever. A single oral dose protects for a whole week. Preliminary studies have shown that the drug is relatively safe to use. But several years may elapse before its prophylactic value can be ascertained.

Fleet's enema has competition. Winthrop Laboratories have introduced Lavema for use as a cleansing enema and as a radiopaque enema adjuvant. The new product comes in powder form and when added to an enema solution produces a stimulating solution that removes gas and feces from the large bowel.

Nardil, Warner-Chilcott's new mood leveler, is getting considerable play in the press and medical journals. It is estimated that 6,500 patients have been treated with the drug by more than 600 physicians without evidence of liver or other serious toxicity. Time will tell.

Actase Fibrinolysin is a newly isolated fraction of human blood that the Ortho Research Foundation is recommending for the treatment of pulmonary embolism and thrombophlebitis. Drs. R. V. Chapple and H. O. Singher reported that 91 per cent of 171 cases showed "good to excellent response."

Merck Sharp & Dohme have combined Hydrodiruil with reserpine (Hydropres) for the control of hypertension.

The attenuated live virus oral poliomyelitis vaccine (Orimune) may be available next year. Lederle has not applied for government license possibly because of the announcement by U. S. Surgeon General Burney that approval of the new product appears to be far in the future. It has been rumored that this policy stems from the fear that publicity about an oral vaccine may interfere with the current vaccination program. At present, Lederle has enough vaccine to immunize 2 million people.

More than 700,000 persons have participated in field trials of this oral polio vaccine in the past nine years. Clinical trials have been conducted here, in Europe, Asia, and in many Central and South American countries. All the children in the most susceptible age group in Costa Rica (448,000), for example, were given the vaccine in March of 1959.

Lederle reports that the product is safe to use in humans and it confers a high degree of active immunity against all three types of polio.

Warner-Lambert set out to find an ideal soft drink and came up with Fizzies. They wanted a product that was low in calories, tasty, and sugar free. Fizzies are tablets about the size of a nickel that effervesce instantly when dropped into a glass of cold water. They are particularly suitable, according to the producer, for diabetic youngsters.

Dr. William P. Mulvaney, University of Cincinnati urologist, who has been working on urinary solvents for years, announced that Renacidin is effective in treating urinary calculi composed of calcium phosphate, magnesium phosphate, and carbonates. This product is composed of lactones and acid salts, and the stones are irrigated by a continuous slow drip method. The aim is to soften the calculus or reduce it to the point where it can be eliminated or removed easily by instrument.

Healthful Hawaii

It did not take long for statisticians of the Metropolitan Life Insurance Company to report that Hawaii, our newest state, can boast an excellent health record. Advances in medical practice, improvement in environmental sanitation,

and a general rise in living standards are given much credit for the good record of the islands. Control over infectious diseases has increased, and striking progress has been made in protecting infant life and making childbearing safer. The average length of life is two and a quarter years longer than for mainland males. This is a good excuse to move to the land of the swaying palms and hula dancers.

CHEAPER MINOR SURGERY

A hint for reducing the cost of medical care: install an efficiently designed minor surgery room.

PUBLIC HEALTH

The Public Health Service reports that during March both the monthly levels and the longer term averages for all radioisotopes in milk samples remained below permissible levels as established by the National Committee on Radiation Protection and Measurements.

The Public Health Service has mapped out many areas that have natural fluoridation. More than 450,000 people in 136 Illinois towns, for example, drink water with enough natural fluoride to prevent two out of three dental cavities.

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Childrens' food preferences

The tendency to express feelings in the stronger terms of "like" or "dislike" may be attributed partly to the relative immaturity of the children. Even at these ages, however, some children expressed indifference to some foods. In fact, two children expressed indifference to 11 of the 25 items . . . Food items in order of popularity, as checked by the children, indicates the predominance of positive feelings toward food. Only one item, fat meat, was liked by less than half the children, while three-fourths liked 17 of the 25 items. All but one child liked meat, meat prepared alone, and ice cream. Fat meat was the least popular item, and fish the second least popular. Potatoes, bread, crackers, milk, raw fruits, and cereals scored high. Raw vegetables were more popular than cooked. Raw fruits, fruit juices, and canned or cooked fruit were liked in that order. Meat prepared alone was preferred to meat prepared with other foods, as in stew. Cake was slightly more popular than pastry. Candy and sweets, though popular, were not among the top favorites. Possibly the responses to these items reflect the adult attitude that these foods are not good for children. *Marian E. Breckenridge. Food Attitudes of Five-to-Twelve-Year-Old Children. J. Am. Dietet. A. July 1959.*

The 1959 Annual Meeting

With a physician registration of 1,833 (total registration 2,976) the annual meeting at Hotel Sherman in Chicago, in May, was a successful one. It differed from preceding meetings in that the first session of the House of Delegates was held on Monday night, prior to the actual opening.

When Raleigh C. Oldfield, retiring president, (left) handed the official gavel over to our new president, Joseph T. O'Neill, Harold M. Camp was called to the platform in recognition of his having completed 35 years as secretary for the Society. Dr. O'Neill is wearing the new President's Medallion, an origination of Mrs. Oldfield. He in turn will present it to his successor. The center, a caduceus, is removable, to be made into a key, to be worn by past presidents.

Three new members of the Council were named during the meeting. Ralph N. Redmond of Sterling succeeds George E. Kirby in the Second District. William E. Adams, Chicago, will serve the Third District, replacing H. Close Hesseltine, who became president-elect. Bernard Klein, Joliet, will serve the Eleventh District, replacing Edwin S. Hamilton, who retired after many years of distinguished service.

A large and festive group attended the annual President's Dinner. The immediate past president, Lester S. Reavley of Sterling, was toastmaster, and the speaker was the widely syndicated columnist, Miss Anne Landers.

Public Relations Dinner

A skit called "RX for a Common Code" brought entertainment and education to the largest crowd ever to attend a public relations dinner. Attorney John J. Riordan directed the skit, which humorously depicted the troubles of a medical group "Cuttem, Slicemm & Shotz", and their legal opposites — "Whoop, Holler & Yelle". The cast was made up of lawyers and their office aids.

Attorney John J. Riordan (left) receives congratulations from Dr. Percy E. Hopkins, the Society's chairman of the Committee on Public Relations, on the spirited performance of the group.

The Fifty Year Club

The Fifty Year Club is always enthusiastically attended. Above, clockwise, are Dr. and Mrs. C. D. Render, Oak Park, Mrs. and Dr. W. L. Gregg, Chicago, Drs. Oscar B. Nugent and L. O. Sale, Fisher, Miss Alice Watkins, Decatur, and Dr. Clare A. Garber, Decatur. At left Andy Hall and Theodore R. Van Dellen (right) witnessed the presentation of the outstanding general practitioner certificate to Mark Greer, Vandalia, by Dr. Old field. Dr. Van Dellen was the principal speaker at the luncheon.

The Woman's Auxiliary

The Woman's Auxiliary held their annual meeting simultaneously, under the direction of Mrs. Richard E. Westland, as convention chairman. In the picture at the left Mrs. Fred C. Endres (right) the retiring president of Peoria Heights, presenting the Auxiliary gavel to her successor, Mrs. John Van Prohaska of Chicago.

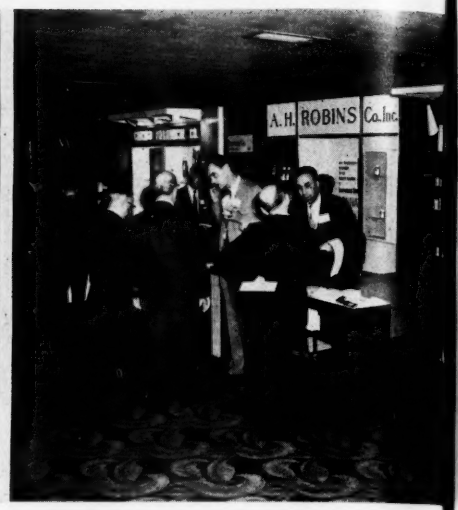
Pictured above are the new auxiliary officers —

Mrs. B. E. Montgomery, Harrisburg — Recording Secretary
Mrs. Edward G. Warnick, Chicago — First Vice President
Mrs. J. S. Lundholm, Rockford — Second Vice President
Mrs. John VanProhaska, Chicago — President
Mrs. Richard E. Westland, Chicago — Corresponding Secretary
Mrs. Charles L. Wunsel, Aurora — President-Elect
Mrs. Newton DuPuy, Quincy — Treasurer
Mrs. John Koenig, Blue Island — Third Vice President

Scientific Exhibits

Winner of the gold medal for original work was the exhibit "Cervical Epithelial Dysplasia — Experimentally Produced" by Harold A. Kaminetzky, Elizabeth A. McGrew, Richard Phillips, Otto Saphir and Michael Leventhal of the University of Illinois and Michael Reese Hospital.

Winner of the gold medal for educational value was "Roentgen and Hematological Manifestations of the Congenital Nemolytic Anemias". There were 25 scientific exhibits by John J. Litschgi of the Cook County Hospital, Hektoen Institute for Medical Research.



Technical Exhibits

Exhibitors generally were pleased with attendance and interest shown. In the picture at the left — Mr. John Adams and Mr. Jim Monilaw of the Upjohn Company are showing their products to Drs. Lee N. Hamm, Lincoln, Ed. Adomaitis, Chicago and U. T. Hodges, Kankakee. At right is a general view of one of the aisles. Keen eyed readers may spot Dr. Harry M. Hedge, Evanston, a past president of the Society.

Negative aspects of physicals

One of the paradoxes of modern medicine is the widespread advocacy of periodic health examinations and the limited extent to which they are practiced. Although Mock introduced health examinations for industrial employees in 1909 and the American Medical Association, as early as 1925, published a manual of procedures for such examinations, they remain unaccepted by a majority of physicians and the great mass of the public.

The reasons for the lack of more general acceptance of health examinations lie in misunderstandings of their potential benefits, the applicable methods, and the costs involved. In too many instances, those who have advocated them have overstated the benefits which may be derived. On too many occasions, health propagandists have excited the interests and expectations of the public with resultant embarrassment of physicians who did not honestly feel that they could achieve the results expected. A striking example of this is the frustration and annoyance felt by the physician who is approached by a person who wants reassurance that he does not have cancer. The physician, knowing too well how difficult it is to detect many internal cancers while they are in an operable stage, is anxious lest a statement that he can find no cancer will be interpreted as a guarantee that none exists. At the same time, he knows that anything less than hearty reassurance may provide anxiety. The physician is likely to be particularly annoyed if the patient expects him to give this reassurance without benefit of X-ray and laboratory examinations.

A more widespread cause of disenchantment for the physician is the experience of performing examinations in military or industrial settings where he observes that, with the methods commonly in use, the proportion of remediable defects he discovers is discouragingly small for the amount of time spent. *Rodney R. Beard, M.D. Periodic Medical Examinations. California Med. June 1959.*

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Tranquility is transitory

Since that awesome moment when man realized the satisfactions of the day were so temporary he would have to repeat the entire procedure the following morning, he has been attempting to regain the tranquility this foresight destroyed. *Malcolm E. Phelps, M.D. Why and Which Tranquilizer? J. Louisiana M.S. May 1959.*

NEWS of the STATE

ADAMS

PICNIC. Members of the Adams County Medical Society enjoyed the Professional Men's Picnic in June at "Ole Doc Bitter's Hideaway."

COOK

NEW MEDICAL UNIT. Two grants totaling $100,000 have been voted by the Jerome D. Solomon Memorial Research Foundation, according to President Seymour B. Orner, Highland Park. The Dr. Jerome D. Solomon Memorial Institute for Graduate Studies in Medicine and Surgery will be established with a $75,000 grant to provide lectureships at the Cook County Graduate School of Medicine. The remaining $25,000 will be used to equip a research laboratory in La Rabida Sanitarium.

NEW PATIENT CARE. The first complete program in Chicago of "progressive patient care" has been started at Grant Hospital. The system encompasses three distinct units — intensive care, intermediate care, and self-care. With the separation of patients into the type of care needed, the medical staff can provide quicker and more efficient service. (See editorial, July IMJ).

HOSPITALS. The new Maribel and Harry Blum pavilion of Weiss Hospital will house its Jacob M. Arvey Clinic. This will permit expansion of clinic services to give more free or minimum cost medical-surgical care to persons who are unable to afford private care.

Work on the proposed $6 million Holy Family Hospital construction is underway. It is located two miles north of Des Plaines and will hold 216 beds.

MEETING. Dr. Max Sadove, professor and head of the department of anesthesia, University of Illinois College of Medicine, gave a report of a Medico-International Co-operation Association tour to Vietnam to demonstrate and teach modern anesthesia at Passavant Memorial Hospital in June before the Chicago Society of Anesthesiologists.

NEW POST. Dr. Lester R. Dragstedt, former chairman of the department of surgery at the University of Chicago, has joined the faculty of the University of Florida College of Medicine. Twice Dr. Dragstedt was the recipient of the Gold Medal Award of ISMS; in 1947 for his work on gastric vagotomy for peptic ulcer, and in 1950 for his quantitative studies on the mechanisms of gastric secretion.

Dr. John C. Troxel has been appointed medical director of Hospital Service Corporation and Illinois Medical Service, of the Chicago Blue Cross and Blue Shield Plans. In his new post, he will be responsible for the internal operation of the medical division and maintain liaison with the medical profession. From 1946 to 1957, Dr. Troxel served as medical director of the Chicago plant of Swift and Company, and since 1957, as medical director of the entire company.

RETIREMENT AND NEW POST. Dr. Percival Bailey, of the neurology staff of the University of Illinois College of Medicine and Research and Educational Hospitals, will retire from the University, Sept. 1. Dr. Bailey will become full time director of research at the new Illinois State Psychiatric Institute, Chicago.

MACON

MEETINGS. The Macon County Medical Society has had no scientific meetings during June, July, and August, but they will be resumed on September 22.

PIKE-CALHOUN

MEETING. The Pike-Calhoun County Medical Society held its June meeting at Pleasant Hill.

SANGAMON

MEETINGS. Guest speaker at the annual meeting of the Springfield Medical Club was Dr. Chester Southam, Sloan Kettering Institute for Cancer Research. "Recent Studies on Cancer Etiology," was Dr. Southam's topic.

The annual picnic for the Sangamon County Medical Society was held at Dr. Furrie's, Lake Springfield.

GENERAL

RETIRED. Major General Olin F. McIlnay, deputy surgeon general of the United States Air Force, retired July 31 after more than 30 years of active military service. General McIlnay is a native of Polo (see IMJ Feb.).

NEW CAMPUS. Governor Stratton and Dr. Walter Theobald turned over the deed to approximately ten acres of land in the heart of the Medical Center District on Chicago's west side to Dr. John J. Sheinin, president of the Chicago Medical School. The new campus will be bounded by Harrison, Polk, Damen, Ogden, and Hoyne. The first buildings being planned include a medical research institute, a new medical school building, and student and faculty dormitories. The school currently enrolls about 72 students each year but an enrollment of 100 is anticipated. A graduate school is planned for students working for advanced degrees.

FELLOWSHIPS. The following physicians from Illinois received their certificates of Fellowship in the American College of Chest Physicians this June:

H. Neale Barnes, Springfield; David R. Barnum, Evanston; M. J. Barrash, Chicago; Joseph A. Cohen, Evanston; Noble O. Correll, La Grange; James Graham, Springfield; John H. Houseworth, Urbana; John P. Igini, Elmwood Park; Milton M. Kadin, Chicago; Morris A. Kaplan, Chicago; William B. Knapp, Evergreen Park; Joseph A. Mezyk, Chicago; William R. O'Connor, Chicago; Camen R. Paynter, Rockford; B. Poskus, Kankakee; George A. Saxton, Jr., Chicago; Albert L. Sheetz, Harvey; Stanford K. Sweany, Chicago; and Louis A. Szivos, Downey.

The American Board of Obstetrics and Gynecology for 1959 certified 19 physicians from Illinois, as follows:

Drs. Donald R. Dye, Nicholas W. Fugo, Mario A. Irigoyen, Harold A. Kaminetzky, Myrna F. Loth, and James H. McClure, Chicago; Leon G. Atherton, Peoria; George E. Fagan, Champaign; Joseph E. Field, Joliet; Robert R. Harriage, Aurora; Lawrence W. Hayes Jr., Belleville; John E. Justema Jr., Hinsdale; Anthony N. Kenwick, Homewood; John W. Roddick Jr., Evanston; Alan B. Sampson and Jack A. Sampson, Oak Park; Richard D. Schreiber, Berwyn; John Standard, Springfield; and Robert G. Stone, Elgin.

ILLINOIS STATE FAIR. An exposé of mechanical quack devices sold and used by the charlatan for health purposes was one of the feature attractions arranged by the Illinois State Medical Society at the Illinois State Fair in Springfield, August 14-23. The display included everything from a magic horse collar, claimed to magnetize the iron in the blood, to a radioactive rejuvenator and many other weird and humorous fake gadgets. In addition, an extensive file containing descriptions and information concerning many more mechanical gadgets used by these fakers was avilable for public inspection.

In more or less the same category of unorthodox procedures was nutritional nonsense. This large exhibit tended to dispel some of the current beliefs concerning nutritional needs and requirements now so conspicuously publicized.

The ISMS's spacious two booth exhibit, located in the north end of the grandstand at the fair grounds has been an annual spot of interest for over 10 years. Each year, in addition to displaying exhibits of current health interest, medical educational films are shown in a minia-

ture theater. Various pamphlets citing medicine's progress and booklets for personal health records are distributed to visitors.

POSTGRADUATE EDUCATION MEETING. A group of four physicians from the Stritch School of Medicine of Loyola University, Chicago, headed by Dr. George F. O'Brien, chairman of the department of medicine, will present a postgraduate conference at Champaign, September 10.

The meeting has been arranged by the Postgraduate Medical Education and Scientific Service Committee of the Illinois State Medical Society for the eighth councilor district. It will be held at the Champaign County Country Club, with the Champaign County Medical Society as the host. It will be opened with a luncheon, followed by the scientific program. Dr. Joseph T. O'Neill, Ottawa, president of the ISMS, will be one of the dinner speakers.

DEATHS

LESLIE W. BEEBE*, Oak Park, who graduated at Chicago Homeopathic Medical College in 1897 died recently, aged 86. He had practiced medicine in Oak Park for 59 years.

MORRIS BRAUDE*, Chicago, who graduated at Rush Medical College in 1905, died June 18, aged 77. He was attending psychiatrist at the Cook County Psychopathic Hospital until his semi-retirement two years ago.

THOMAS O. CANTWELL*, Harvey, who graduated at Rush Medical College in 1935, died July 9, aged 60. He had practiced medicine in the Harvey and Tinley Park area for 22 years.

NICHOLAS ALFRED DIGGS*, Chicago, who graduated at Meharry Medical College, Nashville, in 1916, died June 25, aged 73. He was honorary senior surgeon at Provident Hospital, and an examining physician for the Illinois State Athletic Commission.

MURIEL V. HAYWARD, Coral Gables, Fla., formerly of Winnetka, who graduated at Columbia University College of Physicians and Surgeons, New York, in 1926, died June 10, aged 75. She was awarded the French croix de guerre for her services in World War I.

HARRY HEISS*, Chicago, who graduated at the Chicago Medical School in 1920, died recently, aged 67.

JAMES KOSSE*, Chicago, who graduated at Albertus—Universitat Medizinische Fakultat, Konigsberg, Prussia, in 1937, died April 10, aged 47. He was associated with the Veterans Administration for many years.

LOUIS EUGENE HARTRICK, Champaign, who graduated at Northwestern University Medical School in 1910, died March 19, aged 81. He was also a graduate in pharmacy.

MYRVEN A. LANE*, Orland Park, who graduated at Northwestern University Medical School in 1941, died June 25, aged 64. He was a member of the staff of the Englewood Hospital.

HARRY OLIVER MARYAN*, Chicago, who graduated at the University of Illinois College of Medicine in 1924, died March 28, aged 63. He was a member of the Central Association of Obstetricians and Gynecologists, and a fellow of the International College of Surgeons.

HARRY E. MOCK*, retired, Ormond Beach, Fla., formerly of Chicago before his retirement in 1955, who graduated at Rush Medical College in 1906, died June 30, aged 78. Widely known as an authority on treatment of skull fractures and brain injuries and on industrial medicine and surgery, he was the author of several articles in those fields. He was consultant for a number of railroads, and had served as associate professor of surgery at Northwestern University Medical School. He had been associated with St. Luke's-Presbyterian Hospital since 1915, where, at the time of his retirement, he was given the title of surgeon emeritus.

HENRY ISAAC OWEN, Canton, who graduated at Barnes Medical College, St. Louis, in 1901, died in Peoria March 22, aged 83.

JOHN R. ROMANO, Elmwood Park, who graduated at Loyola University School of Medicine in 1919, died June 12, aged 70. He had been affiliated with the Veterans Administration for many years.

CHARLES R. ROTH*, retired, Chicago, who graduated at Northwestern University Medical School in 1906, died June 8, aged 82. He had practiced medicine on Chicago's north side for 50 years.

HENRY JOHN SCHMID*, Harvard, who graduated at Bennett Medical College, Chicago, in 1909, died June 8, aged 83. He had served as

*Indicates members of the Illinois State Medical Society.

chairman of the Harvard Board of Health for 20 years.

CHARLES J. SOMERS*, Lansing, who graduated at the Chicago Medical School in 1936, died June 24, aged 66. He was a member of the staff of St. James Hospital, Chicago Heights.

FRANK C. STERNES*, Cicero, who graduated at Loyola University School of Medicine in 1933, died June 26 in an airplane crash in Milan, Italy. He and his wife, who also was killed, were ending a five week vacation in Spain, Portugal, Africa, and Italy. He was a member of the staff of the MacNeal Memorial Hospital, Berwyn, and St. Anthony's Hospital. He was 51.

*Indicates member of the Illinois State Medical Society.

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Listen to your patients

Psychobiologic therapy is a collaboration between physician and patient, each learning from the other. It can never be patterned after a preconceived plan, but must always be modified and adapted to a specific patient's needs in a particular life situation. The patient usually comes to the doctor convinced that his abdominal distress or cardiac dysfunction is due to only one possible cause—a disturbance of organic functioning, totally unrelated to his way of life. These basic needs are:

1. The need to talk. Next to bodily activity, talking is the best method of alleviating tension. It gives the patient the opportunity to discharge pent-up feelings and provides him with a sympathetic listener, the physician, upon whom he depends for understanding and guidance. Treatment, therefore, begins by the physician's listening to what has gone wrong. It literally is a form of auscultation, and like auscultation of the heart sounds, one must pay particular attention to everything that is heard. It is impossible to present a list of fixed rules that can be used in this phase of psychotherapy. The following general principles will be of assistance:

a. Listen patiently to what the patient is saying. It gives him a feeling that you are genuinely interested in him as a person.

b. Do not interrupt when he seems to talk of inconsequential trifles. There is no such thing as irrelevance in a patient-physician interview. The patient is expressing his feelings as well as talking about facts.

c. Think along with the patient. Ask yourself not only what is he saying but how he is saying it, and why does he say what he does at this particular moment? Does he need sympathy? Is he misinformed? Does he feel guilty, and therefore is seeking reassurance? Is he angry, afraid, sad, or evasive as he approaches a sensitive personal topic?

d. Show a real interest and personal warmth in what is going on. Ask for more details, examples, or amplifications of what already has been stated in outline fashion. Ask, "Then what happened?" "So?" "And then," or more pointedly, "Why?"

e. Avoid criticism and argumentation. The patient can accept only a part of what you feel or know to be the whole truth. He has been deceiving himself over a long period of time and is not able to see himself as objectively as others may see him. Therefore, never tell him he is "neurotic" or that "nothing is wrong" or that he is "seeking sympathy." *Jacob H. Conn, M.D. Psychobiologic Therapy. Maryland M.J. May 1959.*